SCOTTISH JOURNAL
OF
POLITICAL ECONOMY

JUNE 1959

ECONOMIC GROWTH IN SCOTLAND, 1720-1770

THE purpose of this paper is to examine the economic history of Scotland over a short but critical period, namely, 1720-1770, with a view to eliciting the forces operating in and on the economy.

In a petition to the House of Commons [1] about 1720 we read:

'Scotland is a country the most barren of manufactures of any nation in these parts of Europe; they have nothing of their own growth to export, except corn, coals, cattle and some wool; nor nothing to form any manufactures from that which they receive from their neighbours.'

There is some exaggeration in this statement but not a great deal. Scotland was indeed a desperately poor country. Before the Union efforts had been made to develop industry and to open up trade with distant parts of the world, but all the grand schemes of the Scots came to naught with the collapse of the Darien Scheme in 1704. The loss of over £153,000 on that ill-fated venture brought bitter disillusionment and widespread ruin to Scotland. Small wonder that the Union of Parliaments in 1707 was accepted with sullen resignation. The repayment of the capital of the Darien Company with interest in terms of the Treaty of Union brought relief to this sorely-tried country and made a welcome contribution towards lessening the great scarcity of capital which had depressed Scotland ever since 1700.

But scarcity of capital and lack of enterprise were not the only factors which inhibited economic progress. The climate of opinion was such as to discountenance enterprise and economic pursuits. For instance, for many generations religious disputations had engaged the attention of Scots people, and talents which might otherwise have gone to the advancement of the standard of living were spent in barren controversy. The universities contributed to this state of affairs, for

[1] A short view of some probable effects of laying a duty on Scotch linen imported (British Museum).

ministers were trained there in the scholastic tradition and there was no more powerful or pervasive influence in the country than the pulpit. It is not surprising that everywhere there was a widespread belief in an all-wise Providence whose pleasure or displeasure was shown in many ways but in particular in good and bad harvests. The wretchedness of the crops was attributed to the will of God and not to the farmer's incompetence. Even in trade there was the belief that forces beyond the control of man determined the level of economic activity. In a letter of 1724 from John McAllan, merchant in Glasgow, to Robert Harris, merchant in Edinburgh, we read:

'You seem to be most uneasy about the misfortune of a bad market and do not submit yourself to the providence of a Divine hand which orders all things as he seeth meet. You seem to spurn against your disappointments. You are to make the best of a bad market. You can, which we see is the fate of every honest dealer. Mercats is sometimes up and sometimes down.' [2]

Yet, by the eighteenth century, in the course of little more than a generation, Scotland had established a vigorous and highly developed economy. The statistical material available is irregular and incomplete, but the following table, based on such as is available, indicates increased production.

Linen stamped for sale	2·1 m yds.	(1728)	13 m yds.	(1770)
Tobacco imports	5·5 m lbs.	(1728)	47 m lbs.	(1771)
Tonnage of Scots ships	50,232	(1713)	88,845	(1770)
Excise revenue	£69,250	(1720)	£147,374	(1770)
Total imports	£465,412	(1755)	£1,213,360	(1770)
Total exports	£535,577	(1755)	£1,857,334	(1770)
Home-produced exports	£284,700	(1755)	£510,576	(1770)
Exports of plain linen to America	821,669 yds.	(1755)	2,118,936 yds.	(1770)
Black cattle sent to England	13,839 head valued at £24,218	(1701)	100,000 head valued at £400,000	(1790)
Population	1·2 m	(1755)	1·6 m	(1801)

Sources:
Linen Production: Board of Trustees MSS. (Register House).
Tobacco Imports: P.R.O. Treasury Accounts for Scotland, T.31/13; Customs 14.
Tonnage of Scots Ships: (1713) Historical MSS. Comm. Portland MSS. Vol. X, p. 484. (1770) George Chalmers, *Caledonia* (1810), Vol. II, p. 53.
Excise Revenue: Abstract of Gross and Net Production of All Duties under management of Commissioners of Excise, 1707-1807 (MS. Register House).
Black Cattle: (1701) P.R.O. Customs 315.
Population: Webster, *Account of the Number of People in Scotland in the year 1755*; Census of 1801.

[2] Papers of Robert Harris, Merchant, Edinburgh, 1718-31 (Register House, Edinburgh).

It is impossible to estimate the national income of Scotland at this time, but the above table suggests that it was growing, and indeed growing faster than population, so that income per head was increasing. The improvement in the standard of living is commented on by many contemporary writers. The expansion of the linen industry, for example, was made possible by the rising standard of living of the people. In 1771 when total output of linen cloth was 13½ m. yards no less than 11 m. yards were sold in the home market.[3]

An important prerequisite of economic development is a readiness on the part of people to change their mode of life and be willing to accept innovations and new ways of doing things. Without this essential change in social outlook, capital and enterprise can achieve little. In the first quarter of the eighteenth century forces were in operation which were helping to establish a social and political climate favourable to economic pursuits. In this, the Union of Parliaments in 1707 played a decisive part. It ended the long feud between the Scots and the English and provided an easier intercourse between the two countries. The movement of Members of Parliament to Westminster and the growing social urge, amongst the well-to-do, to visit London and to join in the cultural life of the capital had the most profound effect. As they journeyed southwards on horseback or in the lumbering coach, they had abundant opportunities to view the English countryside, to note the better crops and the superior methods of farming. While in London they were brought into contact with a wider culture and a higher standard of living than they enjoyed at home. They could not fail to be conscious of the shortcomings of their own country. Naturally on their return home they would be anxious to copy English ways of living, and this, of course, meant making a determined effort to improve estates, to make houses more comfortable and manners and social life more elegant, and above all to read more.

In this movement of enlightenment the Scottish universities played a notable role. Francis Hutcheson, professor of moral philosophy at Glasgow, began to deliver his lectures in English in place of the prevailing Latin 'dictates.' He threw his weight on the side of reform and progress; his was a powerful intellectual influence which spread from the university classroom to the pulpit and so to the public. Equally important at Glasgow and Edinburgh universities was the progress now being made in the study of science and in particular of chemistry which was of fundamental importance to agriculture and industry. Indeed one of the most interesting features of the time was

[3] Board of Trustees MSS.; Customs 14.

the application of science to economic ends. At Glasgow in 1748, for instance, William Cullen gave a 'Course of Chemical Lectures and Experiments directed chiefly to the improvements of Arts and Manufactures.' He carried out researches into potash on Rannoch Moor and for his great efforts on behalf of the linen industry, the Board of Trustees, established by Act of Parliament in 1727 to promote manufactures, especially linen, in Scotland, gave him a present of table linen in 1755. In Edinburgh, Francis Home, professor of materia medica, studied the chemistry of bleaching, for this process was a bottleneck in linen production. Master bleachers and others attended Home's lectures in 1755 and so impressed were they that they petitioned to have his lectures published. Earlier, Dr. Roebuck had experimented with sulphuric acid in place of sour milk and in 1749 established a works at Prestonpans for its manufacture.[4] Roebuck and Joseph Black took an interest in James Watt's experiment with the steam engine. The science of agriculture also attracted the attention of the universities. In Glasgow, William Cullen carried on extensive research into the chemistry of the soil, while across in Edinburgh Francis Home published his *Principles of Agriculture and Vegetation* in 1756. While the universities were clearly influenced in their research by the contemporary problems of industry and agriculture, those engaged in farming and manufacture were in turn influenced by the scientific approach of the universities. For example, in 1723 prominent improving landowners and others founded the Society of Improvers in the Knowledge of Agriculture which served as a forum for the discussion of the technical and scientific problems of farming. In his introduction to the proceedings of the Society, published in 1743, Maxwell, the secretary, declared that the subject of agriculture should be taught 'to all who desire to know the secret causes why some plants enrich, and others impoverish the ground in which they grow; why different methods of husbandry produce different effects; and in general, to all who incline to study the reasons for and against the different methods practised.' Agriculture is a science, he urged, and 'should be taught in a college-way, as other sciences are. The Crown names professors and gives them salaries; which of them can be more useful to the publick than a professor of agriculture might be.'

It is true that the ordinary run of people, especially on the land, were bound down by tradition and custom and that their opposition

[4] Board of Trustees MSS., Report 1754; A. & N. L. Clow, *The Chemical Revolution* (1952), pp. 136, 143, 177.

to new methods had to be overcome. As late as 1773 when Wight made his survey of farming he declared:

'The bulk of our farmers are creeping in the beaten path of miserable husbandry, without knowing better, or even wishing to know better.' [5]

Some years later another observer wrote:

'An extensive acquaintance with the mysterious, abstruse and disputed points of systematic divinity, was the species of knowledge they generally sought after, and to which the greatest fame was attached.' [6]

The Union also prepared the way for a more settled political life at home. It is true that after the Union, Jacobite feeling was still strong, especially in the Highlands, but the failure of the Fifteen marked a decisive step in the establishment of stable political conditions. It was followed by a great plan of road and bridge building under General Wade and this did something to establish peace and facilitate commerce beyond the Highland Line. But it was not until the conclusion of the last Jacobite Rising in 1745 that the final step was taken to give Scotland the peace and security she needed for economic development. The collapse of militant Jacobitism was followed by more road and bridge building by the military, while the Forfeited Estate Commissioners rendered a notable service in introducing improvements into the estates under their control.

'The Highlands were now perfectly quiet,' wrote Ramsay of Ochtertyre about 1760, 'and property as secure as in any part of the kingdom. By means of the military roads which were now completed, the country was accessible to strangers, a few of whom by this time had settled on the skirts of it.' [7]

Political stability and the acceptance of broader views on the desirability of economic effort created the necessary physical and cultural environment in which agricultural improver, merchant and manufacturer could operate with success. But this in itself was not sufficient to bring about economic advancement. Enterprise, capital and technical skill were required. Economic growth presupposes availability of enterprise, that is, men who have the capacity to initiate new development, to take risks and make bold decisions based on long-term calculations. Doubtless there are such men at all times but whether they will devote their talents to economic affairs or to other pursuits, like military exploits, depends on the social, political and economic values of their age. In the eighteenth century cultural out-

[5] *Husbandry* (1778), Vol. I, pp. 7-8.
[6] W. Aiton, *General View of the Agriculture of Ayr* (1811), p. 74.
[7] *Scotland and Scotsmen in the Eighteenth Century*, Ed. Alex. Allardyce (1888), Vol. II, p. 508.

look was such that economic pursuits were regarded as wholly desirable and so men who in an earlier age would have applied their gifts to the church or war or diplomacy were now willing and anxious to engage in farming or business or commerce.

Besides enterprise, capital is essential for economic growth. Agricultural improvements involving the planting of trees, the building of dykes and the enclosure of fields, the purchase of seed and improved farm implements required capital; the building of lint mills, roads and canals, houses and ships, required capital, while the organisation of the tobacco trade or the linen industry needed capital at every stage.

The Scots economy was capable of some savings to meet the needs of the time. In the case of agriculture the main source was the cattle trade. This trade, it is true, had been of some importance before the Union. In 1701, for instance, 13,839 head of cattle, valued at £24,218 sterling and representing one third of the value of Scotland's exports to England had crossed the Border.[8] Before 1707 it was subject to interruption, according to the vicissitudes of English commercial policy, but with the Treaty of Union safely on the statute book trade barriers between the two countries were thrown down. The cattle trade was thus able to prosper under the stimulus of expanding markets in England. In 1723 no less than 30,000 cattle were sold at the main market at Crieff to English drovers. But the greatest development took place after the Forty-Five. This was partly due to the more settled political conditions of the Highlands and partly to the substantial rise in prices, following the destruction of rebels' stocks which coincided with cattle disease in England. The price of cattle which had averaged 26s. sterling in 1730 ranged between 50s. and 55s. in 1760.[9] Adam Smith writing in 1776 said:

'Their ordinary price is at present about three times greater than at the beginning of the century, and the rents of many Highland estates have been tripled and quadrupled in the same time.'[10] In another place he says: 'Of all the commercial advantages, however, which Scotland has derived from the Union with England, this rise in the price of cattle is, perhaps, the greatest. It has not only raised the value of all highland estates, but it has, perhaps, been the principal cause of the improvement of the low country.'[11]

The cattle trade stimulated enclosure in Galloway in the 1720s. Several landowners, alive to the profitability of this trade, set about enclosure (for one of the main drove roads to Carlisle passed through

[8] P.R.O. Customs 315.
[9] *Scotland and Scotsmen*, op. cit., Vol. II, p. 233.
[10] *Wealth of Nations*, Ed. Edwin Cannan (1950), Vol. I, p. 150.
[11] Ibid., Vol. I, p. 222.

their county). Profits were easily made, for all that was required was an enclosing dyke, built with stones gathered from the fields. The pasturing of cattle enriched the soil and enhanced the value of the grazings which could readily be let at a good rent. 'Of all the methods used,' writes Ramsay of Ochtertyre, 'to turn the land to good account, it afforded the greatest and most immediate profit at the least expense.' [12]

As cattle in their thousands tramped their weary way from distant glens and straths in the Highlands to be sold at the great Falkirk Tryst before being despatched to England, incomes of landed people rose and the value of estates was enhanced. The greater disposable incomes gave a stimulus not only to afforestation and other agricultural improvements but had favourable reactions on manufactures as well.

While the desire to increase the value of their estates was doubtless one motive it was not the only one: 'Here private interest and public utility seemed to go hand in hand. And hence almost every country gentleman became a professed improver upon a greater or lesser scale.' [13] To improve his estate not only gave the proprietor an increased income, it also enhanced his prestige. Expectation of profit certainly plays a large part in determining the action of the entrepreneur, whether he be landowner or manufacturer but ambition, social prestige and power are also important. Sir Archibald Grant, famous for his zeal in agricultural improvements and especially in afforestation, put it thus in a memorandum to his son dated 28 June 1754:

'Next to our duety to God which is our true and chief interest, attention to health is our second duety, and our next to qualify ourselves to be useful in the world and to exert such qualifications in such a way as Providence allows. The reward and effect of which is the advancement of our reputation and fortune and much comfort and satisfaction with the highest pleasure in all respects and with certainty to ourselves.' [14]

The introduction of improved farming methods, like enclosure of fields, better ploughing, the adoption of crops like clover, rye grass and turnips vastly increased output and so increased incomes, especially of the landowner. In short, more efficient use of resources increased output and raised incomes, while agricultural innovations economised capital per unit of output and so made economic growth possible. On the Monymusk Estate in Aberdeenshire, for example, the total rent almost doubled between 1733 and 1757; in the next 10

[12] Op. cit., Vol. II, pp. 224-5.
[13] *Scotland and Scotsmen*, op. cit., Vol I, p. 248.
[14] H. Hamilton, *Monymusk Papers* (Scot. Hist. Soc., 1945), p. 151.

years it rose by some 40 per cent. Another source of capital was overseas trade. After the Union the tobacco trade increased by leaps and bounds, so that by the thirties the Clyde was the rival of Bristol and Whitehaven. In 1723, Scotland (and this really meant the Clyde) imported almost 6 m. lbs. of tobacco; by 1743 it was 10 m. lbs.; and by 1771 47 m. lbs.[15] Thus Glasgow became the most important centre in Britain of the tobacco trade. It brought great wealth to local merchants. From their profits the tobacco merchants invested in ships and fine mansions and in some cases in industry and agriculture.

Yet when all is said and done, the Scots economy could not provide sufficient savings to sustain the many capital projects then being undertaken. Across the Border, however, there were men who saw in Scotland a fruitful field of investment. It is impossible to guess the amount of capital that came from this source, but there is no doubt it was considerable. Steuart put the figure as high as £500,000 in the sixties.[16] Englishmen lodged money with merchants and private banking establishments in Edinburgh or invested in heritable bonds where it earned 4 per cent., a rate higher than could be obtained on comparable securities in England. Some Englishmen, like Samuel Garbett, the Birmingham manufacturer, engaged actively in industrial development. In 1749 he helped to establish a sulphuric acid works at Prestonpans, the first of its kind in Scotland, while ten years later he played the leading part in founding Carron Iron Works near Falkirk, the first in Scotland to smelt native iron ore with coal.[17] English capital also played an important part in the great project for building a canal from Forth to Clyde. Following a favourable report by John Smeaton in 1767, a subscription list was opened in London as well as in Edinburgh. In a few weeks £100,000 had been subscribed. The impressive list of shareholders, which included many of the landed nobility of Scotland as well as numerous merchants and others from both sides of the Border, indicates the wide appeal of the enterprise.[18] On 10 July 1768, the first sod was cut. The magnitude of the undertaking shows in striking fashion the faith capitalists had in the future, for clearly several years would elapse before dividends could possibly return to them. The interesting point is that this scheme was launched when the Scots economy was nearing a peak though one could not expect business men to know this.[19] More strik-

[15] P.R.O. Treasury Accounts for Scotland, T.36/13; Customs 14.

[16] Sir James Steuart, *Principles of Political Economy* (1767), Vol. II, p. 188.

[17] H. Hamilton, '*The Founding of Carron Ironworks*,' Scot. Hist. Rev., Vol. XXV (1928), p. 185.

[18] *Scots Magazine*, Vol. XXIX (1767), pp. 251-4, 555; Forth and Clyde Canal, pp. 767-73 (MS. Nat. Library of Scotland).

[19] H. Hamilton, 'The Failure of the Ayr Bank, 1772,' *Econ. Hist. Rev.*, Vol. VIII, No. 3.

ing is the launching of the Monkland Canal Company in January 1770, when there were already signs of depression. In this case capital came from the proprietors through whose land the canal was to pass, for they had a vested interest in the coal deposits so near the expanding market of Glasgow. Work was commenced on the canal on 26 June 1770.[20]

The modern economist sets great store on the distinction between autonomous and induced investment. Perhaps all capital is induced, for no investment comes like a bolt from the blue. Even innovation is a continuous though uneven process. What is significant, however, is that some types of investment give a great stimulus to further investment. Canal building is a case in point. The Forth and Clyde Canal, and particularly the Monkland Canal, made possible the opening up of the mineral deposits of Central Scotland and so investment in the canals was quickly followed by large investments in mining undertakings and this, of course, was not the end of the consequential investment.

During this time there was also extensive public investment. Since the Forty-Five, much capital had been invested in communications. Road building in the Highlands, commenced by General Wade after the Fifteen went ahead on an increasing scale after the Forty-Five, giving fresh life to many a parish in the Central Highlands. The maintenance of troops in Scotland to ensure political tranquillity involved expenditure from public funds, while the disbursement of £164,233 in compensation for the abolition of heritable jurisdictions in 1748, as well as the settlement of the creditors of the forfeited estates, provided ready capital for many people great and small. All this, says Ramsay of Ochtertyre, 'gave new life to industry and enterprise of every kind.'[21] But this list does not exhaust the amount of public investment. At the same time, civic authorities, aided by the Convention of Royal Burghs, were building harbours and bridges while the Forfeited Estates Commissioners were carrving out extensive agricultural improvements and building schools, churches and manses on the estates under their charge. The Board of Trustees itself, besides encouraging spinning and weaving by the grant of premiums, was helping to finance the laying down of bleach-fields and the building of lint mills for preparing flax for the spinners.

As early as 1747 a move was afoot for the improvement of Edinburgh and five years later an Act was obtained for this purpose. A contemporary writer in the *Scots Magazine* put it thus:

[20] George Thomson, 'James Watt and the Monkland Canal,' *Scot. Hist. Rev.*, Vol. XXIX (1950).
[21] *Scotland and Scotsmen*, op. cit., Vol. II, p. 213.

'At no period surely did there ever appear a more general or a better directed zeal for the improvement and prosperity of this country. Persons of every rank and denomination seem at length to be actuated by a truly public and national spirit. But when we consider the rapid progress which our trade and manufactures have actually made within these few years, and attentively compare the state of this country as to these particulars with what it was in former times we are persuaded, that an attempt to enlarge and beautify this Metropolis, will now at length be deemed necessary.' Soon large schemes of capital expenditure were undertaken as the grand plan of building New Edinburgh got under way.[22]

There seems no doubt that this considerable public spending stimulated economic activity. National feeling, too, played its part, and indeed a very important part. That long views were taken is not surprising, for as compared with the twentieth century life was placid and there was a confidence in the future which later history has undermined. After all, in the Middle Ages, it was not uncommon for people to set their hand to the building of a cathedral which might take 50, 100 or more years to complete. Confidence and faith were the pillars of their lives. In the eighteenth century, landowners confidently set about afforestation in a big way though 50 or 60 years might elapse before the trees reached maturity. In the interval they had to content themselves with the income derived from thinning their woods.

In this atmosphere of optimism and public spending, long views were taken of the profitability of capital investment. The rising level of output was in fact generated by long range continuous investment. Increased outlays led to increased incomes which in turn created increased output or supply. Such a sequence of events naturally made smooth progress difficult.

All this great activity in manufacturing and investment created a heavy demand for loanable funds. At every point in the economy there was need for short term as well as long term capital. Whether one considers the great agricultural improvements, or the linen industry with its far-flung network of lint-growing, spinning, weaving, bleaching and marketing, or overseas trade then expanding so rapidly, or the great schemes of capital investment outlined above, it is clear that the economy could only function if liquid funds were readily available. The landowner required capital to finance agricultural improvements; the farmer to tide him over his seasonal operations; the

[22] *Scots Magazine*, Vol. XIV (1752), p. 370; Vol. XV (1753), pp. 91, 101, 155, 309; Hugh Arnot, *History of Edinburgh* (1779), pp. 231 et seq.

linen merchant to finance his spinners, weavers and bleachers until the cloth on his hands found a market; the capitalist to meet his outgoings as investment plans took shape; the exporters and importers could not operate at all without loans negotiated by bills of exchange. In short, the provision of finance was an essential condition of expansion.

By the middle of the eighteenth century Scotland had three national banks—the Bank of Scotland, the Royal, and the British Linen Company, which in the late sixties became the British Linen Bank. In Glasgow, merchants and substantial business houses, mostly concerned in the tobacco and sugar trades, dealt in bills of exchange and some, in fact, issued notes and took money on deposit. In 1750, however, two fully-fledged banks, namely the Glasgow Arms Bank and the Glasgow Ship Bank, were established in the city. Tobacco merchants were prominent in both banks. In the Ship Bank, for instance, the chief partners were Colin Dunlop, head of a great firm of Virginia merchants; Robert Dunlop, his elder brother; Andrew Buchanan, also a tobacco lord, whose family gave its name to Buchanan Street, Glasgow; and Alexander Houston, founder of the West India house of Alexander Houston and Company.[23]

Banking facilities, however, do not appear to have kept pace with economic activity, for towards the end of the sixties there were constant complaints that business was being seriously handicapped by the scarcity of credit. A writer to the *Scots Magazine* in February 1762 put it thus: 'If banks do not issue sufficient money, according to the demands of trade and if they do not extend certain accounts a rival bank will be formed . . . Such a rival bank will be undertaken by men of more enterprise.'[24]

Faced with such a situation, many people had recourse to money brokers; others raised money by a chain of bills, a device commonly used in Holland and to a small extent in England. Under such conditions as these, Douglas Heron and Company, better known as the Ayr Bank, was established in 1769. Its purpose, the directors declared, was to increase the supply of finance which at the time was setting a limit to investment plans both in agriculture and industry. Its nominal capital was £150,000, £96,000 of which was at once subscribed. The Duke of Queensberry, prominent Lowland landowner and agricultural improver, and Chairman of the Forth and Clyde Navigation Company, was elected Chairman. Its impressive list of

[23] Robert S. Rait, *History of the Union Bank of Scotland* (Edinburgh, 1930), Ch. II; George Stewart, *Curiosities of Glasgow Citizenship* (Glasgow, 1881), pp. 1-28, 173 et seq.; Charles A. Malcolm, *Bank of Scotland* (Edinburgh), pp. 59-60.

[24] Vol XXIV, pp. 89, 90.

shareholders, drawn from aristocracy and commerce alike and from both sides of the Border, suggests that existing banking facilities were inadequate for the needs of a rapidly expanding economy. Moreover, it shows the combination of national feeling and the pull of economic opportunity.[25]

Still another condition of economic growth is availability of skill. The nature of Scotland's foreign trade at the time of the Union shows the backward state of Scotland's economy. The main exports were raw materials, like wool and hides, while, for the most part, imports consisted of manufactured goods. The Scots could not compete with the English or the Dutch in the production of fine cloth, for their standard of workmanship was so inferior. One of the first actions of the Board of Trustees was to bring in expert weavers from France. These men with their families were settled in Edinburgh where the Trustees provided houses for them. According to their agreement they were to train Scots in the art of weaving and a premium of £16 was to be paid for each apprentice so trained. The weavers' wives were expert spinners and they were required to teach Scots women and girls. The growing of flax and the preparation of it for the spinners also called for attention, for the Scots were very inexpert. Accordingly skilled flax raisers and hecklers were brought from Holland and again they were required to teach local people. They were settled in different parts of the country where they were given a few acres of land to demonstrate their skill.[26]

In farming, too, technical skill was necessary. In the 1720s, for instance, Sir Archibald Grant of Monymusk brought a skilled overseer from Buckinghamshire. This man, Thomas Winter by name, took up residence at Monymusk in 1726 and, though at times he was exasperated by the apathy and ignorance of the local people, he diligently pursued his grand object of raising the standard of farming on the estate. He never tired of pointing out to his employer that the employment of technical skill and new implements must march together. In 1726 he wrote, 'I also wish for English horses and harness and plows, which will be very much wanted, for should we in England labour our land though the best of it after such a careless maner and with such instruments we should get nothing but weeds.[27] Other improving landowners were equally conscious of the importance of skill and new implements. Elizabeth Mordaunt, daughter of the Duke of Peterborough, who married the eldest son of the Duke of Gordon in 1706 became an enthusiastic improver and

[25] 'The Failure of the Ayr Bank,' et supra.
[26] Board of Trustees MSS. Reports 1728, 1731, 1732, passim.
[27] *Monymusk Papers*, op. cit., p. 108.

she brought ploughs and skilled ploughmen from Nottingham. The Earl of Haddington records that he brought 'a farmer and his family from Dorsetshire in hopes that he would instruct my people in the right way of inclosing, and teach them how to manage grass seeds.'[28]

In 1727 when a partnership of English ironmasters set up furnaces at Invergarry in Inverness-shire, charcoal burners were brought from Ireland and skilled smelters from England.[29] Later in 1759 when the Carron Ironworks was being promoted the availability of skill was the subject of lengthy discussions between the partners. Samuel Garbett, a Birmingham manufacturer, who was the leading light in this enterprise, insisted on bringing in English skilled men not only to build the furnaces but to manage the smelting operations as well. In June 1759, for instance, a skilled furnaceman was brought from Coalbrookdale and, shortly afterwards, other men were engaged with whom agreements were made to teach Scots. Indeed, all the operations from ironstone mining to smelting depended on the acquisition of experts from England.[30] One could multiply instances of English and foreign skill being brought in to help in the development of industry and agriculture, but sufficient has been said to show its importance for economic growth in Scotland during the period with which we are concerned.

Thus we see that the main factors making for economic growth were present in eighteenth century Scotland. There was a social and cultural atmosphere which favoured innovation, there was enterprise, and there was capital and finance. It was Schumpeter who pointed out that one cannot explain *economic* change by previous *economic* conditions alone. The economic state of a country at any point of time emerges from the preceding total situation. It is difficult for the economic historian to isolate economic factors for at all times he is conscious of the non-economic factors which are influencing economic growth.

He is also conscious of the fact that growth has its price. The price is not just skill, foresight and human energy, but something deeper—the disruption of old and cherished ways of life. Those most interested in development do not at the time appreciate the sacrifices that many people are called on to bear. And so there is resentment and bewilderment. Witness the exodus of people from their homes as agrarian improvements advanced—the thousands of Highlanders and other country people, driven by relentless economic pressure, who

[28] James E. Handley, *Farming in the Eighteenth Century* (1953), pp. 144-8.
[29] Invergarry Ironworks Papers (Register House).
[30] 'The Founding of Carron Ironworks,' ut supra.

painfully moved to the cotton mills of Lanarkshire. The economist speaks of the increase of the factor—labour—as an element in economic growth, which it certainly is. If at all, he only dimly perceives that growth and development involve heavy sacrifices on the part of some, in ways of living or working or in habits of consumption.

HENRY HAMILTON

University of Aberdeen

REFLECTIONS ON THE GROWTH OF CAPITAL AND INCOME

I

Investment and Growth

It is an ancient heresy that you can buy anything for money. Nobody, I hope, believes it nowadays, but it seems to have popped up again since the war in a more subtle form: money makes money. If only you have capital, development is easy; the more capital you invest, the faster you will develop. Conversely, if you are not developing very fast, blame the rate of capital investment. Capital represents purchasing power over all the other factors of production, so that there can be no shortage of any of these factors that does not yield to an adequate supply of capital.

There are a number of reasons why this convenient doctrine is so widely accepted. First of all, there is the fact that capital is something that lends itself to government action. If you haven't enough, you can borrow; if investment is not taking the 'right' direction, you can control it. If poor countries are a political danger and just have to be developed if they are not to become a nuisance, they can be lent or given the necessary capital. If the regional balance within a country is unsatisfactory, measures to supplement investment in the laggard areas will help them to catch up with the rest of the country.

Capital is equally 'manageable' from the point of view of the theoretical economist: he can build it into satisfactory models and watch how the growth of capital and income respond to one another, without stopping to ask whether both may not respond to something else, such as technical progress. For is it not self-evident that, without investment, technical progress would be unavailing? And does it really matter, therefore, if the word 'investment' does double duty for the two separate processes of capital accumulation and technical advance? Or, if models of growth must be complicated by such inelegant variables, is it not at least legitimate to keep them well in the background, like the electricity supply, with a definite potential and frequency?

Then there are simple matters of fact. If the capital-output ratio has been constant, as is alleged, over long periods of time, does this not create a presumption that if only capital can be pushed up, out-

put will follow? Is it not obvious that the countries where investment has been highest in recent years have also enjoyed the most rapid advance in production and income?

How much of all this are we to accept? In a matter of such enormous importance, economists should not have to fall back on *a priori* assumptions, arguments by analogy, and fragmentary evidence, as they so often do. There are some quite simple calculations that suggest that, in a country like the United Kingdom, capital investment cannot account by itself for more than a limited proportion of the growth in productivity from year to year. The same line of argument suggests that the acceleration to be expected as a result of additional investment, within reasonable limits, would also be relatively modest.[1]

Net investment in the United Kingdom has in recent years averaged about 10 per cent. of national income while the increase in output has averaged about 3 per cent. per annum. If the average social return on the additional capital invested was, say, 10 per cent.—and it is unlikely to have been much higher, for reasons given below—the increase in output attributable to investment comes to 1 per cent., or one-third of the total increase; and an increase in the rate of investment by one-half unaccompanied by other changes, would *at most* bring about a change in the rate of growth of output from 3 to $3\frac{1}{2}$ per cent.

Calculations of this kind usually fail to impress economists who are already believers in high investment. They take issue with the suggestion that the average social return on capital is unlikely to be higher than 10 per cent. (in real terms, of course) in an advanced industrial country like the United Kingdom; they point out that other changes are bound to occur as investment rises; and they cite other countries, particularly Germany, Russia and the United States, to show that high investment pays handsomely.

The first of these points is difficult to submit to any conclusive test. If one is thinking of manufacturing investment, one may postulate a financial return, after depreciation but gross of tax, of 20 per cent., or even more, as the average outcome of new investment; and one may reasonably argue that the investment will be likely to have some effect on the wages of those who use the capital, or the price of the final product, so that the financial return falls short of the social return. There are difficulties in following this argument too far: the financial return is, after all, uncertain, and if it is possible to *count on* an average as high as 20 per cent., the capital market will have to be

[1] The same conclusion is reached by a different route in O. Aukrust, 'Investment and Economic Growth,' *Productivity Measurement Review*, February 1959, pp. 48-9.

highly imperfect to prevent an immediate diversion of capital from other uses where far lower, but more certain, returns are treated as equivalent. In addition, the return is sustained by uninterrupted technical progress; and if the pace of technical progress remains unchanged, it is to be presumed that the marginal return, giving effect to the less revolutionary changes in technique, will be well below the average return, which embraces the yield on all technical changes to which managements do in fact give priority.

Manufacturing rarely accounts for more than about one-quarter of gross fixed investment and, since it is weighted heavily by comparatively short-lived types of asset, the proportion of net investment is certainly no higher. It is not possible to generalize from this limited proportion to the whole. The social return on total investment depends far more on the return to be expected from the remaining three-quarters, the bulk of which is accounted for by dwelling-houses on the one hand and power and transport on the other. (I leave on one side additions to stocks because, so far as I know, no one is prepared to argue that a faster rate of accumulation of stocks would accelerate economic growth.)

In the years 1953-57 net fixed capital formation in the United Kingdom (if one may accept, without cavil, the official figures) averaged £1235 m. at 1954 prices. Of this total, no less than £355 m., or nearly 30 per cent., took the form of dwelling-houses. It is anybody's guess what social return should be assumed for this investment, most of which was heavily subsidized, but it would be difficult to enter an average much in excess of the financial return expected on it; for the sake of argument, we may take 7 per cent. Over the same period, net fixed capital formation by public corporations, almost all in fuel, power and transport, averaged about £200 m. a year on assets other than dwellings, equivalent to a further 14 per cent. of the total. Here again it is difficult to know what social return to assume : the financial return, taking depreciation at replacement cost, was negligible. By far the largest item was investment in electricity generation. But, once generating capacity is adequate to meet the peak demand without power cuts, additional investment in electricity generation, while it may make for more efficient operation of the power stations, does very little to add to the efficiency of industry generally: so that, marginally at least, investment in electricity could not offer a particularly high return and would eventually serve only to create surplus capacity. On the other hand, other forms of public investment (e.g. in roads) were obviously starved and the social return in some directions might have been at least comparable with investment in manufacturing. Taking everything all round, I should doubt whether one could claim

either an average social return on past public investment, or a marginal return on any future increase, higher than 7 per cent.

If this argument is accepted, it follows that on nearly half the total of fixed capital investment, the social return was almost certainly well under 10 per cent. while on half the rest, the return may have been as much as 20 per cent. Without going through all the other items, which include schools, waterworks, drainage, etc., on the one hand, and distributive services, agriculture, etc., on the other, I think it not unrealistic to take an average return of 10 per cent. as a basis of judgment, *given the conditions ruling in the United Kingdom in recent years.*

It may be objected that these conditions could be changed if investment were higher. Would this not introduce a more dynamic atmosphere and force people to re-examine established ideas and techniques so that innovation would proceed more rapidly? We know too little about the forces governing innovation to be dogmatic about an issue of this kind. It seems likely that high investment *expresses* a change in ideas and techniques rather than *provokes* them; but the sequence may well be of the hen-and-egg type and start with one or the other.

What we can say with more certainty is that it makes a world of difference what sort of country we are talking about. If an industrial country suddenly loses a large proportion of its real assets but still retains its man-power, its skill, its organizing ability, its social institutions and habits, no one need dispute that capital will be a genuine bottleneck to recovery and every act of investment will restore productive power visibly and decisively. If the sparking plugs are removed from an engine and then replaced, the effect is dramatic and not to be compared with the effect achieved by replacing old plugs by new ones of improved design. The case of Germany, therefore, has very little in common with that of, say, India where the engine has still to be built, or, say, the United States, where sparking plugs and engines abound in all possible combinations. Similarly, if a country is in course of industrialization, and can draw an almost unlimited man-power into urban factories from the country-side, as in U.S.S.R., capital may be the controlling element in the growth of industrial capacity and output, and additional investment may permit a more rapid mobilization of otherwise idle or under-utilized resources. To conclude from this, however, that *all* economic development is equally dominated by capital accumulation is plainly unjustified. A country at the frontiers of technical progress, already highly industrialized and urbanized and fully employed, has more reason to concentrate

on the quite different, but much more difficult, problem of speeding up the commercial and industrial exploitation of new knowledge.

But *is* it a quite different problem? What of the argument that innovation automatically involves investment while investment almost automatically gives effect to innovation? First of all, about half the new investment undertaken annually in the United Kingdom is in replacement of existing assets. This leaves very considerable room for manoeuvre in taking advantage of technical progress. Obviously, the latest equipment can be installed, instead of the original type of plant, when replacement takes place, and the cost will often be no higher or may even be less. Moreover, industries able to take full advantage of technical progress will, if the capital market is working smoothly, outbid other, less progressive industries, and get the capital they need at the cost of outlay on renewals in the latter. This may seem at first sight unrealistic since it would seem to imply bringing a large section of industry to a standstill. But in an industry where technical progress is slow it may be sufficient to keep existing or stand-by machinery going for some years longer, at a rather higher operating cost.

If gross investment in the United Kingdom were to fall by one-half, net investment would become zero, but innovation would not be arrested. A rise in interest rates, for example, might force most of the cut onto house-building and allow industrial innovation to proceed at full speed at the cost of overcrowding or inferior housing.

Leaving these considerations aside, it is reasonable to ask whether investment and innovation are really so closely linked, after all. How exactly does innovation affect investment and vice versa? The question is not one on which existing capital theory is particularly informative.

II

The Capital-Output Ratio

I was brought up on a theory of capital which took little account, in any explicit way, of the interconnection between investment and innovation. Much of it was directed to explaining the phenomenon of interest and ran in terms of marginal efficiency of capital. The theory was not much concerned with dynamic and cumulative changes in which total output grew, and it either ignored them, in order to concentrate on the length of the period of production, or tended to generalize from the factors governing the behaviour of the individual unit, whether on the side of savings or investment, to the factors governing the aggregates in an entire economy. No consideration was

given to the rebound on the demand for capital that follows any increase in income brought about by the use of more capital in a fully employed economy. It was also difficult to be sure, when a writer was discussing an increase in capital, whether he meant an increase in the rate of investment or an increase in the stock of capital.

The current tendency is to start with a macro-economic analysis in terms of capital coefficients, concentrating on the growth of capital and output, and relegating problems of allocation and distribution to a back seat. The supply of other factors of production is largely taken for granted and assumed to accommodate itself to the growth of capital, which, explicitly or implicitly, figures as the controlling element. The idea of marginal efficiency, while not abandoned, is rarely brought into relationship with that of the capital-output ratio; and economists move rather uneasily between the two sets of concepts as the type of problem under discussion alters.

The capital-output ratio is a useful and natural concept for the purposes of national economic planning. This is particularly true where it is necessary to check the consistency of targets for the growth of national income against the additional capital likely to be available from current savings or foreign investment. But even in calculations of this kind there are important ambiguities.

First of all, there is a tendency to use the ratio as a measure of the productivity of capital, on the assumption that the whole of any increase in output can be attributed to the expansion of capacity resulting from investment. This tendency is conspicuous not only in many of the discussions about under-developed countries, where it may have some slight justification, but even in writings about advanced industrial countries, where the contribution of additional capital to economic growth is obviously far from 100 per cent. In some versions, a looser causal relationship between the growth of capital and of output is assumed, but capital is still treated as the bottleneck and a fixed relationship is taken to do no real violence to the facts.

The capital-output ratio, however, is merely a quotient measuring, in its incremental form, the relative rates of increase of capital and output. If it could be shown that it was fixed in respect of each constituent of total output by technical factors, this would not mean that technical factors alone governed the ratio for total output, since the constituents of output may vary in weight with changes in demand brought about by economic factors. There is, in any event, neither constancy through time in production coefficients, nor constancy at any one time between one firm and another, and the methods of production in use yield, to some extent at least, to the pressure of

economic factors such as the relative cost of different productive agents.

If appeal is made to the facts, it appears to be true that for the few countries (all of them industrial) for which adequate data exist, there has been some degree of constancy over long periods in the average capital-output ratio. But this is not true of the *marginal* capital-output ratio. There are, in any event, good *a priori* reasons for expecting any change in the average ratio to be slow (since the yearly increments, both in capital and income, are normally small in relation to the pre-existing totals) and for expecting some of the more important constituents of the capital stock to bear a fairly constant relationship to total income.[2] Fluctuations in the ratio do occur; and it is too early to form any firm conclusion as to the long-term trend and the resistance that would be offered by technical inflexibility to persistent economic forces such as a change in habits of thrift.

If one looks at the practice of countries engaged in national economic planning, there are further grounds for scepticism. In the U.S.S.R., for example, it is an article of faith that the capital-output ratio must go on rising; successive plans have provided for a higher rate of growth of producer goods than of consumer goods. On the other hand, in some of the under-developed countries there is a willingness to plan for a falling capital-output ratio; and in some South American countries, where plans are less fashionable, output does appear to have expanded in post-war years a good deal more rapidly than capital.

Apart from these considerations, there is no reason why constancy in the capital-output ratio should be accepted as demonstrating a causal connection in one direction rather than the other. If income is growing, it is almost inevitable that savings will grow, too; the more rapid the growth of income, the higher the proportion of income that is likely to be saved. The accumulation of capital may, in those circumstances, be little more than a symptom of development, rather than its cause. If, for example, all economic activity took the form of agriculture and house-building, and technique stood still in the building industry but progressed rapidly in agriculture, the growth of agricultural output might be accomplished with little or no additional investment of capital, while the increase in income might give rise to a larger demand for house-room and hence for capital. Any constancy of the capital-output ratio in such circumstances would reflect the income-elasticity of demand for housing, not the inflexibility of

[2] See my contribution to *Economic Growth* ed. L. Dupriez (Louvain, 1955).

the technique of producing food or building houses; and the growth of capital would be a function of the growth of income, which in turn would be a function of technical progress.

A somewhat similar situation might occur if technical progress in agriculture (e.g., the use of better seeds) put little demand on capital in that sector of the economy but made it necessary to provide additional storage, transport and port facilities in order to handle the larger crops. The capital-output ratio in agriculture itself might fall; but the fall could be largely or entirely offset by some consequential change in another sector, a change that of itself would do little to promote the growth of output, but might be indispensable in order that the economy should enjoy the full advantage of technical change.

It might be supposed from these examples that this objection to a causal interpretation of constancy in the capital-output ratio rests on the unequal incidence of technical change in different sectors of the economy. That there is such inequality of incidence is apparent enough; but even if it did not exist, the objection still stands. For within each sector also, there is no necessary identity between the areas of rapid change and the areas of heavy investment. The mainspring of economic progress lies in innovation in the widest sense, rather than in capital accumulation; and if innovation leaves the capital-output ratio unchanged, this reflects a particular balance of forces between different elements of technical change and the broader economic factors governing the growth of capital and income, and is in no sense a demonstration of the predominance of capital over the other factors operating on productivity.

Some economists have put this proposition more strongly and argued that all technical change must be capital-saving (in Sir Roy Harrod's sense of the term) since, if there is no change in available resources, including capital, and the productivity of these resources increases, this must imply a fall in the capital-output ratio. In one way this is true : technical progress will raise output without additional *saving,* for example by permitting existing instruments to be replaced by instruments of equal cost but greater productivity. But in another way, the proposition is not true: if technical progress allows more machines to be made at the same cost, capital increases at the same time as output and the capital-output ratio will remain constant if producer goods and consumer goods benefit equally from the advance in techniques. There is, in fact, an ambiguity in the measurement of capital of which too little store is taken in most discussions of capital-output ratios. If one looks at the stock of capital as the

cumulative product of past thrift, one necessarily disregards the steady accretion that results from technical improvements in the manufacture of capital goods—improvements that allow depreciation funds to be used to better purpose on reinvestment than when a similar sum was originally invested. Similarly, in any estimation of future capital requirements—in the sense of fresh savings to expand the capital stock —some allowance ought to be made for the continuation of technical change in the producer goods sector before any calculation of incremental capital-output ratios.

This is by no means the only difficulty involved in the operational use of the concept. There are several additional circumstances which make it hazardous to interpret the results of empirical research. For example, in an under-developed country, land is one of the most important forms of capital just as food is one of the most important items of income; land values are unlike other property values and cannot easily be amalgamated with them if the amalgam is to have any theoretical significance. Much the same problems arise when estimates of capital have to be based on current yields rather than on cost of reproduction. Then there are the types of capital, notably consumers' durables, that may gradually replace producers' durables but are commonly excluded from estimates of the capital stock; and on the side of output and income, there are the numerous and important examples of non-monetary transactions and self-supplied consumption that are usually omitted but may form a large proportion of total real income. Further difficulties of interpretation spring from divergent movements in the prices of capital and consumer goods : the process of economic development may bring about a change in the cost of labour relatively to the cost of capital and if there is any difference in capital intensity between the industries' producing capital and consumer goods this will cause their prices to diverge and so disturb the ratio of capital to output.

Given the importance that has come to be attached to the capital-output ratio, it is remarkable how little attention has been given to the forces at work on it. In the pre-war literature, much of the discussion abstracts almost entirely from the factors that seem to have been of first importance: technical change, urbanization, geographical discovery, etc. Instead, prominence was given to changes in technical coefficients in response to changes in the cost of capital—a process which now tends to be belittled. In keeping with the emphasis on obtaining the best allocation of resources, it was assumed that the supply of capital would be made to go round by a kind of price rationing which would exclude uses and methods offering an insuffi-

cient return. If capital became more abundant, this would increase the competitive advantage of more capital-intensive methods of production, more durable (but more expensive) forms of capital, and products making more lavish use of capital in their manufacture. This 'deepening' of capital was assumed to be governed, with some reservations, by diminishing returns, so that the capital-output ratio, had it featured in the exposition, would have been likely to be represented as tending to increase.

One important reservation concerned the possibility of increasing returns. Most of the discussion on this subject related to manufacturing industry, a sector in which only a relatively small proportion of total capital was employed, and the discussion was directed more to issues of monopoly and competitive equilibrium than to the macro-economics of capital. Nevertheless the same line of argument was obviously as applicable to a railway network as to a steel mill; and in late Victorian times the importance of this reservation must have been apparent. After the middle seventies, railway-building took a much reduced slice of national savings, and this relaxation of the pressure did not prevent the railways from carrying a rapidly expanding traffic.

The possibility of increasing returns rests largely, in the present context, on an expanding population and output. This expansion allows fuller use to be made of capacity created earlier and permits, therefore, of some economy in the use of capital per unit of output. An increase in population does not operate necessarily or exclusively in this direction, however, since it may put pressure on scarce resources and make it necessary to sink increasingly large amounts of capital in order to obtain given additions to the supply. The dominant effect of the increase, leaving these opposite possibilities on one side, and assuming also that employment rises at a parallel rate, is to make capital and output rise together and to preserve constancy in the ratio between the two. The more this process of capital 'widening' enters, the greater the stability imparted to the capital-output ratio. If population is increasing rapidly and unemployment is not resulting, any other factor will have to have a very marked tendency to expand or contract capital requirements per unit of output if the change in the ratio is to be appreciable. In nineteenth-century Britain, the rate of growth of population was about 1 per cent. per annum while income and capital grew about twice as fast. Thus fully half of the growth in income and capital was controlled by a factor unlikely to disturb the ratio between the two.

A less obvious factor operating on the ratio is the pattern of demand. This was implicit in the classical formulation, since changes

in the rate of interest could affect the demand for the more capital-intensive products such as house-room and bring about a redistribution of demand in favour of those products. There is also an income element to be considered, since the pattern may change through time with the growth of income, its distribution, and all the dynamic elements that change spending habits for reasons unconnected with prices and incomes. The shift towards services and away from food is the most prominent example of a change in the pattern of demand that may have important effects on the demand for capital and the capital-output ratio. The emergence of synthetic materials and products is of comparable importance, but reflects a change in supply conditions at least as much as in demand and is cited below from this point of view.

Industrialization is undoubtedly one of the most important determinants of the ratio. It commonly involves the swallowing by the towns of large numbers of agricultural workers who are largely redundant to the needs of the rural areas from which they come. There are few things that make greater demands on capital than towns and the period of urbanization is inevitably one of high investment; but it is usually also a period in which income seems to grow rapidly, perhaps because of the spurious indices by which it tends to be measured,[3] but no doubt also because of real economies of scale and concentration. Thus the effect of industrialization is to put a strain on available resources of capital, without necessarily deflecting the capital-output ratio a great deal. *A priori*, one might expect the large housing requirements of urban living to push the ratio up; but, as we have seen in Russia, and as we saw earlier in England, overcrowding and slums can provide a buffer if the shortage of capital is acute. Town-building may do no more than meet the bare requirements of industry for the housing of its workers and be carried through at far less capital cost than seems desirable to a later and richer generation.

A rather similar effect, although in the opposite direction, may be produced by the spread of literacy and education. This is generally recognized to be one of the keys to successful development and is likely, therefore, to go with a rapid growth in income. It is sometimes suggested that the outlay involved ought to be regarded as creative of personal capital and that when this adjustment is made, the capital-output ratio may show little change. It is doubtful, however, whether a large change would result even without the adjustment: for with better education there is a tendency to make use of more and better

[3] Cp. S. Kuznets, *Economic Change* (London, 1954), Ch. 6, 'National Income and Industrial Structure.'

equipment, so that physical capital rises along with human, and the movement in the capital-output ratio is damped.

The influence of foreign trade and investment is also important. Many of the under-developed countries find that development is frequently associated, causally or otherwise, with a more than proportionate growth, especially in the early stages, in foreign trade, and that some at least of their most promising export lines call for heavy capital expenditure. This is particularly true where there are mineral ores and oil to be exploited and a need for extensive transport improvements before trade can be conducted. We know relatively little, however, about the capital-output ratio in the export sector of the economy in comparison with the ratio for the economy as a whole. All we can say is that there may be a divergence between the two and that foreign trade may cause the capital-output ratio to diverge from the capital-income ratio, measured from the side of consumption rather than production.

Foreign investment permits of a similar divergence between the requirements of capital needed to produce a given domestic output and the supply of savings generated by the corresponding income. It is curious, given the historical importance of foreign investment in relation to economic development, how rarely it features in models of economic growth. There is a good deal of evidence that capital requirements at some stage in growth are apt to outstrip domestic savings and at other stages to be outstripped by them. If there is international mobility of capital, therefore, and if different countries are at different stages in the cycle of growth, the explosive interaction of savings, income and capital requirements that many economists put into their theoretical crucibles operates through a safety valve in the balance of payments rather than through wild fluctuations in the level of employment. The saving clause is, however, an important one : for if the major economies are all at the same stage, the safety valve cannot operate.

The importance of this factor was most evident in Britain in the years immediately before 1913 when total capital, including foreign investments, represented about six years' income while domestic capital was only equal to between four and five years' output. Had the current savings of the country all been absorbed domestically, the incremental ratio of capital to output would have had to be very high indeed, especially as, over much of this period, the rate of growth of real income was extremely low. At the *average* rate of growth of 2 per cent. per annum the incremental ratio, with savings at 15 per cent. of income, would have had to be no less than 7·5, and if the diversion

of savings to home investment had had the effect on income growth that one suspects, it might have had to be even higher.

The operations of government can exercise a similar influence. It is obvious that governments can make large drafts on national savings without any visible increase in output. This is so in war-time but it is true also of war preparations that lead to the creation of debt and of many objects of government borrowing even in peace-time. The effect of a long war, moreover, is likely to be to depress the capital-output ratio either through the destruction involved or through neglect of repairs and replacements. Hence an equilibrium that would seem impossible between a high rate of saving and low capital requirements may be maintained through erratic incursions by government into the capital market. Nor is there any reason why the incursions need only be erratic, since the government may systematically regulate the pressure on capital by operating directly on its own requirements, wherever these are capable of postponement, or through the budget surplus so far as this is politically acceptable.

Finally, we can hardly overlook the effects of innovation. There are few things that have been so neglected by economists in proportion to their importance or handled so misleadingly when introduced into economic analysis. It is hardly open to doubt that technical progress has been the most important instrument in raising the standard of living over the past two centuries; nor that, along with population growth and migration, it has dominated the course of investment in time of peace. To discuss the capital-output ratio without regard to the effects of innovation, therefore, is to re-write Hamlet and leave out the Prince.

Nor is it possible to make the heroic simplification that its effects on the ratio are neutral. As has been argued above, the historical stability of the capital-output ratio could be due to quite adventitious circumstances, since the major uses of capital are highly concentrated and need show no necessary identity with the major areas of innovation. Moreover, even if, in the long run, innovation does prove to be neutral, there is no reason why this should imply neutrality in the short run to which most analysis of stability and fluctuations applies. The typical, and by far the most important innovation in the nineteenth century, was the steam engine and its by-product, railway transport. It took half a century at least to build the railway system in this and other countries; and if, at the end of that time, the capital-income ratio was no higher than before, this would prove nothing at all about the pressure of capital requirements in the interval. Current investment in railways in the early phase of railway-building may easily

have dwarfed the release of capital for the maintenance and replacement of other forms of transport; while eventually the stock of capital invested in all forms of transport might reach a total no higher in relation to the output of transport services than obtained before the railway age. It is not necessary to hold that this was in fact so; the point of importance is that an *acceleration* of technical progress, or the emergence of a major innovation in a stream of minor ones, is bound to increase capital requirements in advance of output and introduce a disturbance to the existing equilibrium between savings, income and the rate of capital accumulation.

Whether technical progress does accelerate from time to time we cannot be certain since no one has yet succeeded in devising a measure that would assist judgment. Nor is it easy to say whether innovation does in fact exert its main pressure in the direction of greater capital intensity. Perhaps the big inventions—steam power, electricity, nuclear energy, synthetics of all kinds—do work this way; but the host of minor inventions and improvements that are less conspicuous and less talked about may well operate in the other direction.

III

The Future Demand for Capital

If we look through the catalogue of capital requirements and sources of income growth to see which are expanding and which diminishing, it is apparent that big changes have occurred within the past half century or so. In many directions the impulses associated with industrialization had spent themselves by the first world war and the subsequent history is one indicative of a reversal of trend between the wars and a partial resumption since. On the whole, however, the outstanding impression conveyed is one of a progressive narrowing down of the forces governing the growth of national income to innovation and technical progress, and of a faster rate of growth in income per head. This points to some acceleration of technical progress and still more strongly to an increasing dependence of economic stability on the link between innovation and investment.

The most striking change is usually assumed to have been a demographic one. It is true that the birth rate in the U.K. is only half as great as in Victorian times and that we keep expecting to see the labour force contract where once it expanded steadily. But if we measure the change in labour supply in terms of man-hours worked it has been less striking than is commonly imagined. The population

never grew by more than some 1 per cent. per annum in Victorian times and it is unlikely that employment, however measured, grew faster than this. The growth in employment was a good deal less rapid in the inter-war period, particularly if allowance is made for the fall in working hours. But between 1948 and, say, 1956 employment again increased at 1 per cent. per annum and man-hours worked grew slightly faster. In the United States, where the birth rate is half as high again as in Britain, there is the additional factor of diminished immigration; but even so, employment in the post-war period has probably risen faster than in most previous periods. Thus the change in trend, although marked in the inter-war period, has been far from obvious in the first post-war decade. It is only now, partly because of unemployment, that the labour force in Britain is beginning to reflect the underlying change in the trend of population.

Similarly, although the drift to the towns might have appeared to exhaust itself long ago, it is still in progress though on a much smaller scale. Here the contrast with inter-war experience is less evident; for town-building went on apace between the wars even in the industrial countries, owing, in part, to the depression in agriculture and the expansion of employment in services of all kinds.

Making allowance for any exaggeration in popular belief, however, it remains true that we can no longer hope for the enhancement of income growth that sprang in the past from an expanding labour supply and the exodus from relatively backward rural areas. Nor is there likely to be any comparable enhancement from more intensive education now that there has been free secondary education for over a generation. The United Kingdom is less likely to enjoy the fruits of increasing returns, given the existence of a developed transport system, a power grid, and all the facilities offered by the concentration of industry in well-defined areas. On the other hand, it has had to face a form of diminishing returns in the high price paid for imported materials and foodstuffs; and much technical ingenuity and capital have been expended in developing new synthetic materials in place of imports that had become scarce and seemed likely to remain so. The heavy capital requirements of agriculture and coal-mining have a similar origin and rail transport seems also to show symptoms of diminishing returns to investment. In addition, the pattern of demand has in some ways altered so as to make increased demands on capital, the most conspicuous example being the improvement in housing standards.

On balance, therefore, while the influences that used to give an upward thrust to income—other than innovation—have lost ground,

the demands on capital have been better maintained. There is, however, one important exception: foreign investment has fallen heavily and a much smaller proportion than formerly of current savings flows abroad.

One further circumstance has had an important influence during most of the post-war period. There have been, almost throughout, heavy arrears to be made good because of war-time standstills in construction, wear and tear, neglect, and damage, and because of the big jump in the level of activity over pre-war. These arrears have been tolerable only at the cost of congestion (e.g. roads), breakdowns (e.g. power supply) and capacity operation (e.g. steel); and they have been gradually overhauled by the creation of fresh capacity at a rate somewhat in excess of the expansion in output. Hence the margin between the actual capital-output ratio and the desired or optimum ratio—which is another way of saying the real shortage of capital—has been in course of disappearance. The simultaneous rise in private savings may well correspond to a similar overhauling by consumers of their own arrears of durable goods in relation to current income levels. Unfortunately we have no indices by which to keep track of either phenomenon, indispensable though they are to any forecast of the likely tendency of capital requirements.

We are left with the major unknown: the tendency of current innovation. The drift of the argument so far is that, in the post-war period, the capital-income ratio has been maintained above the pre-war normal but that one of the most important influences maintaining it has been transitory. Either, therefore, it will now drop (and savings will have to drop with it or find an outlet in foreign investment or in various forms of social investment) or the forces of innovation will have to operate more powerfully in favour of capital intensity, or there will have to be some acceleration of technical progress in such a way as to make heavy immediate demands on capital.

IV

Conclusion

This analysis brings us back to the argument from which we started. Current discussion fastens too unrelentingly on capital investment, particularly industrial investment, as the prime means of promoting a rise in living standards. An increase in capital-output ratios that does not express an underlying change in technological possibilities is not likely by itself to accomplish much in a fully industrialized

economy. It corresponds to those changes in technical coefficients, divorced from any advance in the productive arts, that are featured in classical economics. There is no reason to assume that the really important advances are passed over, either in the private or in the public sector, in favour of less profitable ones. A higher level of investment might, of itself, set up a fresh and perceptible impulse to further technical development; but this is less probable when the level of current investment is already high. The real need is for more rapid technical change and for action to encourage and promote innovation. If this can be secured there are no adequate grounds for supposing (credit squeezes and C.I.C. apart) that the investment by which effect is given to the new techniques will fail to occur. Naturally this is a judgment that needs extensive qualification: business men may be too cautious, too much given to self-financing, too ignorant of sources of capital, and so on. Nonetheless, applied to the United Kingdom, it contains an essential truth: it is indifference to the possibilities of technical progress far more than lack of capital that prevents a more rapid improvement in productivity and income.

A. K. Cairncross

University of Glasgow

THE RESTRICTION OF ROAD HAULAGE

I. Introduction

Free enterprise in the road haulage industry was severely restricted by the Road and Rail Traffic Act 1933, which made it necessary for would-be new entrants to obtain special licences before they could operate. Hauliers wishing to carry other firms' goods applied for an 'A' licence, those wishing to haul both their own and other firms' goods applied for a 'B' licence, and manufacturers wanting to carry their own goods (the ancillary users) applied for a 'C' licence, which prohibited them from carrying other firms' traffic. Licences were granted by special Licensing Authorities for Goods Vehicles, set up under the Act, provided that existing transport facilities (which invariably meant the railways) were inadequate for the work which the applicant intended to do. This provision was interpreted in the technical sense; the fact that a newcomer could do the same work more cheaply was not regarded as a reason for allowing him to enter the industry. Moreover, established hauliers had to apply to the same authority for permission to expand their vehicle fleets, and were opposed by the railways on the same grounds.

The decision to legislate against the expansion of road haulage, a young and rapidly growing industry providing a very convenient service, was reached after the deliberations of a Royal Commission on Transport,[1] under the chairmanship of Sir Arthur Griffith-Boscawen, and after the report of a Ministry of Transport Conference,[2] chaired by Sir Arthur Salter. The Conservative Government, the Labour Opposition, the railway companies, the representatives of road hauliers, and the trade unions all agreed that such restriction was necessary. In the face of widespread agreement among such conflicting interests, it may seem difficult, even impertinent, to question the conclusions reached by a Royal Commission and a Ministry of Transport Conference of experts. However, it will be shown that much of the evidence presented to them was based on general impressions rather than established fact and cannot by any means be regarded as authoritative.

In the sense that it deals with the arguments current 30 years ago this paper is mainly historical, but the question of restriction is highly

[1] Final Report of the Royal Commission on Transport, *The Co-ordination and Development of Transport* (Cmd. 3751, 1931).

[2] *Report of the Conference on Rail and Road Transport* (Ministry of Transport, 1932).

relevant to the present day debate on the nationalization, denationalization, and renationalization of road haulage. After all, the exponents of nationalized road haulage have a powerful argument when they point out that the alternative in practice is not free competition, but competition among a privileged group of licensed hauliers protected from new entrants. Again, the question of licensing is important even in the present system of partial nationalization. The Conservative Government's Transport Act 1953 made it necessary for nationalized road haulage (British Road Services) to obtain carriers' licences under the 1933 Act, in accordance with its policy of establishing competition on equal terms between nationalized and private enterprise road haulage. The Labour Party hopes to repeal this provision, as part of its programme for renationalization, and free British Road Services from the restrictions of the 1933 Act. If returned to office, the Labour Party also plans to make it more difficult for manufacturers to obtain 'C' licences to carry their own products in their own vehicles, recognising that nationalized transport has more to fear from the competition of this type than it has from non-nationalized road hauliers.

An alternative approach to this problem of licensing and nationalization would be to abolish the licensing provisions of the 1933 Act and to allow nationalized road haulage, private enterprise road haulage (including new entrants), and the ancillary users to compete freely with each other. In addition to the theoretical advantages of such a policy, which attract economists, it would have the important practical advantage of solving the controversy on the appropriate degree of nationalization, ranging from zero to 100 per cent., which plagues the industry as each political party in turn wins an election and reorganizes road haulage to suit its own political taste. Under such a system of free competition—retaining all the provisions of the Acts of 1930 and 1933 governing speed limits, drivers' hours, fitness of vehicles, etc.—nationalized road haulage would tend to expand if it were more efficient, and contract if it were less efficient, than other hauliers.

The objections to this alternative policy are based on the findings of the Royal Commission on Transport and the Salter Committee, namely that licensing is necessary to prevent a return of the allegedly chaotic conditions in the industry which were prevalent in the inter-war years. A re-examination of these findings is therefore relevant to present-day policy.

The reasons advanced for the restriction of road haulage may be divided into three main arguments: first, that the industry was in some sense unstable and needed regulating; secondly, that owner-drivers were a menace on the roads, owing to their excessive hours of work

and poorly maintained vehicles, and had to be discouraged; thirdly, that licensing was necessary to co-ordinate road and rail transport. In addition, there was the argument of the railway companies, accepted by the Salter Committee, that road hauliers did not pay their contribution to the costs of the roads and should, therefore, pay increased taxes. Although increased taxation of the industry in the budget of 1933, and in many budgets since, presumably restricted the growth of road haulage through forcing hauliers to increase freight charges, this particular argument is best treated as a separate issue and is not considered here.

II. The Instability of Road Haulage

The instability of freight rates

The main problem concerned freight rates; road hauliers charged lower rates than the railways, who objected very strongly, and some small hauliers charged lower rates than the larger and more firmly established hauliers, who rejected the case of the railways but nevertheless objected to the small firms. Trade unions took exception to the low wages and poor conditions of service which tended to accompany low freight rates and they provided additional pressure to raise rates.

The whole period was one of falling prices and the nadir was reached in the period 1929-31, the background to the deliberations of the Commission. This must always be borne in mind. As was pointed out at the time by the Commercial Motor Users' Association, the

> 'surplus of transport facilities at the present time has led to intensive competition between various systems of transport as well as internal competition within individual systems. This state of affairs is common to commerce generally, owing to the prolonged depression in trade throughout the world and has resulted in the search for a new level of low prices . . .' [3]

There were special reasons for falling prices in the road haulage industry. Rapid, cost-reducing changes in techniques accentuated the fall in freight rates; the introduction of the diesel engine, the increasing use of pneumatic tyres, and the increase in the loaded : tare ratio were the more obvious improvements. So rapid were these changes that the Commercial Motor complained, '. . . a second-hand commercial vehicle is behind the time today if it is only one year old. It is sadly out of date if two years old and almost obsolete if three years of age.' [4]

[3] Royal Commission on Transport, *Minutes of Evidence*. Appendix: Memorandum No. 62, submitted by the C.M.U.A.

[4] *The Commercial Motor*, Vol. 49, 1929, p. 608.

The difficulty experienced by the small hauliers in obtaining return loads also tended to reduce freight rates,[5] for they were prepared to accept very low rates for return journeys rather than return to their bases with empty lorries.

Ancillary users were also blamed for increasing the intensity of competition; some traders, after carrying their own goods on an outward trip, competed with the hauliers for return loads. The extent of this sort of competition was probably small, but in terms of potential competition the threat of the manufacturers carrying their own merchandise was very real indeed. The hauliers had to minimize costs and charge the lowest possible rates or they would lose traffic to manufacturers who decided to do their own haulage work.

The practices of clearing houses were yet another reason advanced for the prevalence of low rates. These traffic exchanges obtained traffic from the manufacturers and sub-contracted it to the hauliers, especially to those who had arrived in a strange town and wanted a return load. Clearly, it was in their interest to maximize the difference between the rate quoted to the manufacturer and the rate given to the haulier, and this could be achieved more easily by forcing down the haulier's rate than by quoting a higher rate to the manufacturer, since the haulier was in a weaker bargaining position than was the manufacturer. Some clearing houses combined the sale of vehicles on the instalment system with a guarantee that loads would be found and accepted. Under this type of agreement the haulier was bound to take traffic from the clearing house—even at ridiculously low rates—with the result that he could not cover his costs and could not pay the instalments on his vehicle. The clearing house reclaimed the vehicle and sold it on hire purchase to another lorry driver who wanted to start his own business and the sorry tale was repeated.

The Long Distance Road Haulage Committee

For its information on the instability of road haulage, the Royal Commission relied heavily on the evidence of the last witness it examined, Sir Maxwell Hicks, chairman of a large road haulage firm, McNamara (1921) Ltd., and his intimate knowledge of the industry must have impressed the Commission, for nearly all the recommendations of his Committee formed part of the Commission's recommendations in its Final Report. He appeared on behalf of the Long Distance Road Haulage Committee (L.D.R.H.C.)[6] of which he was chairman,

[5] Cf. G. J. Ponsonby, 'Freight charges by road in competition,' *Economic Journal*, Vol. 48, 1938, pp. 60-62.

[6] The L.D.R.H.C. was the main witness which could legitimately claim to represent the road hauliers: the small firms were not represented at all.

and convinced the Commission that small haulage firms were largely responsible for the many evils in the industry. He complained that large haulage firms, who had a sense of responsibility to their employees and who kept proper accounts, were suffering from the uneconomic competition of irresponsible small hauliers. The latter charged rates which did not provide an adequate return to capital. They quoted low rates because they had to secure return loads, or

TABLE I

THE LONG DISTANCE ROAD HAULAGE COMMITTEE OF INQUIRY

Firms represented	No. of vehicles (1930)		
	Under 10 ton capacity	10 tons and over	Total
Dalgleish & Sons, Nottingham	8	—	8
A. J. Gupwell, Birmingham	36	10	46
Kneller and Chandler	12	18	30
M.R.S. Ltd.	45	102	147
McNamara (1921) Ltd.	over 50	over 70	over 120
George Munro Ltd.	40	—	40
Northern Motor Utilities	24	4	28
Ryburn Garage & Transport Ltd.	22	14	36
Southern Roadways Ltd.	28	33	61
United Services Transport Ltd.	n.a.	n.a.	n.a.
Nottingham Chamber of Commerce	—	—	—

Source: *Roadway Goods Transport Guide* 1931.

because they had fallen into the clutches of a clearing house. Small firms were continually entering the industry and being forced to leave because of the owner's lack of business knowledge. Owner-drivers were working excessive hours, and were frequently unable to maintain their vehicles in proper condition; their fatigue, together with their unsafe vehicles, made them a danger to other road users.[7] In short, the small firms were not only the competitors of the large firms, they were also a threat to the whole community.

For these reasons, the L.D.R.H.C. wanted the licensing of hauliers by Area Traffic Commissioners who would grant licences only to *bona fide* hauliers with some knowledge of the industry and of their responsibilities. Furthermore, it wanted the licensing of vehicles according to their fitness for work and the licensing of clearing houses on the basis of their knowledge of the industry, their capital and their record. The Commission rejected the last proposal, on the grounds that clearing houses would tend to disappear as the industry was reorganized on a satisfactory basis, but it accepted the other proposals.

[7] Cf. Section III, below.

Under questioning, Sir Maxwell denied that he wanted a quasi-monopoly for his industry. He admitted that low rates benefited the traders in the short run, but argued that, in the long run, low rates were bad for they would bring about the decline of the whole road haulage industry. He was definitely in favour of *economic* competition (that is, of road against rail) but he objected to *uneconomic* competition (of small firms against large firms). At the same time, he did not think that his licensing schemes would penalise the small hauliers; anybody who had some knowledge of the industry could be classified as a *bona fide* haulier and would be admitted into the industry under his scheme. This scheme was not so restrictive as that adopted under the 1933 Act but it may be regarded as a fore-runner.

The L.D.R.H.C. was an unofficial body formed to study the condition of the industry, to report to its members, and to present evidence to the Royal Commission, which was sitting when this committee was formed, *before* it reported to its members. The presentation of evidence to the Commission must therefore be regarded as the *raison d'être* of the L.D.R.H.C. The formation of pressure groups need not be undesirable, providing all parties are represented so that the power of one group offsets that of another, leaving the Commission to strike the balance. But there was no representative of the small hauliers. In its role as the main witness giving evidence on behalf of the road haulage industry, the L.D.R.H.C. was unsatisfactory and exerted a disproportionate influence on the Commission. The method of conducting its inquiry could hardly be called impartial[8] and the only reason for relying on its evidence was the absence of other representatives of the industry. The representative of the Commercial Motor Users' Association (C.M.U.A.) was questioned some two years previously and the appendix submitted by his organization makes it clear that it would have been interesting to have heard him after Sir Maxwell Hicks, for he seemed to have formed different impressions of the industry. But partly because the C.M.U.A. did not really represent road hauliers, the evidence of the L.D.R.H.C. was preferred.

Sir Maxwell Hicks said his Committee was formed by most of the leading firms in the long distance section of the industry.[9] A perusal

[8] Royal Commission on Transport, *Minutes of Evidence*, p. 973, Q. 14970: Did you do it (i.e. make the inquiry) by means of a questionnaire sent to all firms? Hicks: No. This is a Committee of Inquiry where certain men reasonably well-known (shall I say) in the trade—their names were circulated—and the leading members of this section definitely said they were prepared for this Committee of Inquiry and would like them to inquire and to report, *which will be done in due course*. But the Committee was given permission before circulating their report to give evidence if required to this Commission.

[9] Ibid., p. 967, Q. 14856.

of trade journals[10] and of the Roadway Goods Transport Guide for 1930-31 has revealed the names and sizes of the firms whose representatives met in London and set up the L.D.R.H.C. As shown in Table I, there were ten firms, plus the Nottingham Chamber of Commerce which was represented because it had a clearing house.[11] These firms appointed a committee of five to inquire into the conditions in the industry, the members being Sir Maxwell Hicks, chairman (McNamara), W. Donaldson Wright (Nottingham Chamber of Commerce), E. C. Marston (M.R.S.), J. M. Bright (Southern Roadways), L. W. Cupwell (A. J. Cupwell) and E. B. Hutchinson, as secretary.

So much, then, for the story of the L.D.R.H.C. A very small group of road hauliers and clearing agents met, set up a committee which claimed to represent long distance hauliers, and presented a memorandum to the Royal Commission which was virtually transcribed into the road haulage section of the Final Report on *The Co-ordination and Development of Transport*, 1931. There were only ten firms, with about 500 vehicles, represented at the inaugural meeting, and only four of these were represented on the L.D.R.H.C. Though 25 or 30 more firms associated themselves with the work of this committee before the evidence was given, they had little chance of modifying it because the L.D.R.H.C. submitted evidence before it reported to its members. Even if its members had nothing to add to its memorandum, this committee could hardly claim to represent an industry, with about 25,000 road haulage operators and a total of 80,000 vehicles.[12] Even if it had been more representative, its evidence should not have been accepted automatically.

Causes of Instability and its Treatment

Now that the evidence of the L.D.R.H.C. need no longer be regarded as authoritative, we are free to examine the accuracy of their impressions, and the validity of the conclusions that the basis of the troubles of the road haulage industry was the persistence of low freight rates, owing to the ease of entry and lack of knowledge, together with the correspondingly high bankruptcy rate.

The failure of one road haulage firm damaged its creditors, including other firms to whom it subcontracted work and clearing houses from whom it bought petrol and tyres, who lost money through no fault of their own. If many firms were going bankrupt, only to be re-

[10] Cf. *Motor Transport*, Vol. L, 1930, p. 611.

[11] Kneller and Chandler, McNamara, M.R.S., and Ryburn all acted as clearing houses in addition to their haulage work.

[12] Figures of 'A' licences for the first year of the operation of the 1933 Act show that there were 25,393 licences current and 91,274 vehicles authorized, of which some 6,000 belonged to the railway companies.

placed by new firms who were also likely to fail because of their lack of knowledge, then the 'chain reaction' became even more serious: the industry would be unstable in the sense that there would be no tendency for an equilibrium number of firms in the industry, but merely violent fluctuations about that number, as firms entered and left the industry. If something like this happened then there was a case for regulating the industry. The problem is to decide which set of restrictions would have removed the instability.

The first point to make is that there would probably have been fewer complaints about low freight rates and fewer bankruptcies if there had been full employment instead of the worst slump experienced in history. If this is true, there was no case for restricting the output or price-level of the road haulage industry unless it could be shown that it had special problems of instability which would not have been removed by the institution of general economic stability.

The nefarious activities of the clearing houses were alleged to be one force peculiar to the road haulage industry and contributing to instability. The solution to this problem would not have been difficult. Even highly competitive markets such as the Stock Exchange regulate their brokers to a certain extent, and certain malpractices of clearing houses could have been made subject to similar regulations imposed by the State or by any association of clearing houses. Such regulation is not incompatible with competition and, indeed, may be regarded as part of the legal framework which is necessary to ensure that competition can function at all. The only difficulty here is to ascertain whether these malpractices were sufficiently widespread to merit special treatment. That there were some very bad cases cannot be denied, in view of the evidence supplied by trade journals, by witnesses to the Commission and by road hauliers who have related to me their personal experiences. But it would be misleading to generalise from these examples; some of the most important clearing houses supported the L.D.R.H.C. either from the outset or shortly after, as in the case of Carey, Davis and Thomas Ltd., and it is unlikely that they would have attacked their own methods of business. The clearing house of the Nottingham Chamber of Commerce was an outstanding success and there were other examples of specialist trades, such as the Lancashire textile trade, operating their own clearing schemes with equal success. The Commission regarded them as products of the unsatisfactory conditions prevailing in the road haulage industry and suggested that they would tend to disappear as these conditions improved. The fact that there was no such tendency indicates that they performed useful functions as brokers. Most middlemen are subject

to severe criticism from market users and that the freight exchanges did not escape this criticism is not surprising.

The argument that the instability of freight rates was aggravated by ancillary users plying for return loads was used by the L.D.R.H.C. and this practice was eventually banned under the 1933 Act, when those holding 'C' licences were prohibited from carrying other people's goods. However, the significance of this practice was probably overestimated by the Commission. The evidence of the C.M.U.A. was in direct contrast to the views of the L.D.R.H.C.

> 'With but very few exceptions well-organized trading concerns who operate their own road motor transport do not engage in carrying other people's goods by way of return loads. The amount of such traffic carried by ancillary users is negligible and any system to use their vehicles for work of this character has been found to cause serious disorganization of their regular transport services.'[13]

Since the ancillary user of commercial motor vehicles accounted for the bulk of their membership, the C.M.U.A. can be regarded as speaking with authority on this topic, and yet, with the exception of the reservation of Sir William G. Lobjoit,[14] the Royal Commission relied on the L.D.R.H.C.

The Proposals for Licensing

The Road and Rail Traffic Act 1933, which provided for the restriction of entry cannot be directly related to the Report of the Royal Commission: the criteria for licensing under this act were put forward by a Ministry of Transport Conference, under the chairmanship of Sir Arthur Salter, which based its conclusions of instability in the road haulage industry on evidence presented to it by the Road Haulage Association.[15] The Royal Commission thought that the instability of the road haulage industry would be removed by a licensing system based on ensuring minimum standards of wages and conditions of service of employees, and on ensuring the fitness of vehicles.

[13] Royal Commission on Transport, *Minutes of Evidence*, Appendix: Memorandum No. 62.

[14] Royal Commission on Transport, *Final Report*, p. 176, para. 3. Sir William Lobjoit: 'I believe that the practice of return loads (for ancillary users) can rarely be an economic proposition for such firms as it must throw their time-schedules out of order; that the example of the Nottingham Chamber of Commerce proves that Clearing Houses can be properly organized; that lack of oganization in the industry is much exaggerated and that, if it exists, the proposal for licensing is not calculated to remedy it.'

[15] The Road Haulage Association mentioned here must not be confused with an organization with the same name which exists today. See footnote 17.

> 'The system of licensing which we contemplate and recommend is very simple compared with that which we recommended and which is about to be put into force in connection with public service vehicles. *In the first place there is no need for such a comprehensive scheme in regard to vehicles carrying goods as in the case of vehicles carrying persons, and in the second, the transport of goods by road does not lend itself to a licensing system such as is practicable with passenger transport by road . . .*' [16]

The enforcement of safety standards and of minimum wages and conditions would not have restricted entry of those hauliers who were prepared to satisfy these requirements, and would not have created an industry sheltered from new competitors.

The licensing scheme of the L.D.R.H.C. would also have excluded would-be hauliers who did not have enough knowledge of the industry or sufficient capital in an attempt to reduce the excessive rate of entry and exit. It was true that entry into the industry was very easy; very little capital was required and the major capital items could be purchased on the instalment plan. The ease of entry may have led many people to try their hands at this industry rather than some other industry for which they were more suited but which they could not enter because of the high initial capital costs. Because of this there was a case, albeit slight, for the imposition of an artificial barrier to entry. The Long Distance Road Haulage Association Ltd. (L.R.D.H.A.) [17] made this point very clearly in its comments on the Final Report of the Royal Commission, comments which it was asked to make to the Ministry of Transport.

> 'In suggesting the additional qualifications (i.e. knowledge and capital), the Association has in mind that the entry to the trade is at present open to anyone regardless of standing and/or knowledge of the business, and that as a result of the free entry of unsuitable persons or firms, the stability of rates has been seriously affected . . .' 'The very type of business, holding out promise as it does of an open air life of freedom from discipline and control, has undoubtedly tended to attract to it an irresponsible type of man, and in suggesting that consideration be given to the suitability of the applicant the Association does so *not with any object of restricting entry to the trade to those who are in possession of either resources or experience suitable to the reasonably safe conduct of the business of a Haulage Contractor*, but with the object of excluding irresponsible persons whose entry to it can only be

[16] Royal Commission on Transport, *Final Report*, op. cit., p. 93, para. 339. (My italics.)

[17] The L.D.R.H.A. succeeded the L.D.R.H.C., and was in turn succeeded by the R.H.A. which gave evidence to the Salter Committee. Next came the Associated Road Operators, and after this the present Road Haulage Association.

detrimental to the general welfare both of the trade and of the community generally.' [18]

It may be argued that the L.D.R.H.A. Ltd. damaged its own case at the beginning of the second passage quoted, but it must be admitted that some people, such as former bankrupts, for example, could have been excluded from the industry and that this might have diminished instability. To argue that the working of the price-mechanism under competition would have ensured that entrepreneurs who had neither the necessary knowledge nor the necessary financial reserves to pay creditors would be driven out of business by others who had may explain a tendency to equilibrium in the static analysis of perfect competition, but it is an insufficient guarantee of stability in a dynamic real world, especially in a general depression of trade. The proposals of the Royal Commission and of the road hauliers were valid in the sense that if the evidence on which their conclusions were based was true, they could have been justified on the grounds of leading to a workable competition. But these proposals for the licensing of road haulage were quite different from the scheme laid down by the 1933 Act. The fundamental criterion of the latter was whether the existing transport facilities in the area in which the applicant wished to operate were adequate and therefore it discriminated against new-entrants in favour of those already in the transport industry, especially the railways. This criterion was not proposed by the road hauliers, nor was it advocated by the railway interests [19] in their evidence to the Commission; it was the result of the deliberations of the Salter Committee, which was influenced by the evidence of the R.H.A. to the effect that there was 'unbridled competition' and a perpetual procession of bankrupt hauliers as a result of the excessive numbers in the industry.

'Any individual at present has an unlimited right to enter the road haulage industry, without any regard to the pressure on the roads or *any existing excess of transport facilities.* He is able to purchase his vehicle on the instalment system and is often tempted to force his way in by offering rates which are completely unremunerative and necessarily lead to a bankruptcy which, nevertheless, does not discourage others—or perhaps even himself—from following the same course in a perpetual succession. This unrestricted liberty is fatal to the organization of the industry in a form suitable to a carrier service purporting to serve the public.' [20]

[18] *Communications received in response to the Ministry's request for observations on the Final Report of the Royal Commission on Transport* (Ministry of Transport, Cmd. 4048, 1932), p. 39. (My italics.)

[19] Cf. Section IV.

[20] Ministry of Transport *Report of the Conference on Road and Rail,* 1932, p. 32, para. 100.

Whereas the scheme recommended by the impartial Royal Commission, and even the slight modifications added by the L.D.R.H.C. and the L.D.R.H.A. would have been sufficient to ensure reasonable stability, the scheme put forward by the Salter Committee was more than sufficient and could not have been justified even if bankruptcies were excessive. Moreover, there is a strong probability that the bankruptcy rate in road haulage was not in fact excessive. The number of bankruptcies in the Board of Trade category 'Carriers, carters, lightermen, hauliers and the like' fluctuated between 100 and 200 per annum over the period 1928-33, and even if all these are attributed to road hauliers they would amount to a mere one half of one per cent. of haulage firms.[21] It is unbelievable that the Royal Commission and the Salter Committee did not look at the figures of bankruptcy and relied entirely on the general impressions of witnesses, so we must assume that they regarded the figures as misleading, possibly because failures did not necessarily go bankrupt but were acquired by other haulage firms. However, there is no reason to suppose that the rate of acquisition of firms was higher in road haulage than in other industries.[22]

The average liability of these bankrupts 1928-33 was less than £1,000, so that it is safe to assume that they were mainly small firms. But there were so many small firms and so few large firms in the industry that such a result could be expected even if the chance of becoming bankrupt was the same for small as for large firms. Little is known about the fortunes of large road hauliers in the depressed inter-war period, but we do know that large size was no guarantee of success. Between 1928 and 1937 *Northern Motor Utilities,* a large haulage firm with a nation-wide network of depots, paid no dividend on ordinary shares. *M.R.S. Ltd.,* one of the founder members of the L.D.R.H.C., went into voluntary liquidation in 1935. The large *Bouts-Tillotson* group was losing money in 1936 and 1937. Even *McNamara* did not escape misfortune in the inter-war period. Between 1925 and 1930 it paid no ordinary dividend, while in 1920 it was still in the hands of a receiver, Sir Maxwell Hicks,[23] who became chairman of the reconstituted company. It is suggested that failure was not the prerogative of small firms; any firm was liable to have difficulties in the depressed years between the wars.

The upshot is that the present retention of the licensing scheme under the 1933 Act cannot be based on the instability arguments

[21] Cf. W. M. MacLeod and A. A. Walters, 'A note on bankruptcy in road haulage,' *Journ. Ind. Econ.,* Vol. V, 1956, pp. 63-67.

[22] Ibid.

which had such a powerful influence on the Royal Commission and on the Salter Committee.

III. Accidents and Road Hauliers

Closely related to the alleged instability of the industry was the claim that low freight rates forced owner-drivers to work excessive hours, and to neglect the maintenance of their vehicles, which made them a danger to the community through 'being on the road when they ought to be in bed.' The evidence of Sir Maxwell Hicks is worth quoting.

> 'The consequence (i.e. of low rates) is that those owner-drivers and one-man or two-man firms, in order to live . . . have got to work far more than the normal hours of working . . . It has consequently become the practice on the main roads of England for a great many drivers habitually to sleep at the side of the road.
>
> I can give you a case of a firm owning not thousands but tens of thousands of tons of shipping. In my house I have had one of the Directors telling me himself that he was running lorries for the firm . . . which were doing with one driver between 700 and 800 miles a week. The scheduled running was that those drivers only slept in their beds on Wednesday, Saturday and Sunday nights, they were scheduled to sleep on the road on every other night . . . it leads to impossibly uneconomic rates and they become a danger to other road users and to the public.
>
> In my own experience some two years ago a lorry under my control was going north in the middle of the night; the driver fancied he saw on a road bridge two cyclists' lights and he did not decelerate. When he got up to the crown of the bridge he found what he thought was two cyclists' lights were the lights of a lorry drawn up on the crown of the bridge, five feet from the near side of the road with the driver asleep. Fortunately he did not kill anyone, but there was a considerable smash. But that lorry was drawn up five feet from the near side of the road, on a main road, on a bridge, and the driver was asleep. That is the sort of thing we are up against.'[24]

The picture of defective goods vehicles being driven by fatigued drivers, causing accidents and being a danger to the public, is confirmed by the experience of men still in the industry and who were

[23] Even the voluntary liquidation of the company in 1921 cannot be attributed to the post-war slump for Mr. Maxwell Hicks, as he was then, was appointed receiver in 1913. This large haulage firm was in a bad way long before the advent of the owner-drivers of lorries in the 1920s.

[24] Royal Commission on Transport, *Minutes of Evidence*, Q. 14888, p. 969.

driving this type of vehicle during the early 1930s. Impressions gained from conversations with these men, and the evidence submitted by Sir Maxwell Hicks, have to be compared with the statistics of accidents of the Ministry of Transport and the evidence of others. The Commercial Motor Users Association (C.M.U.A.) challenged the evidence of Sir Maxwell Hicks.

> 'Goods vehicles in commercial ownership are, in general as well maintained as are vehicles in private ownership and there is not sufficient ground for any requirement as to inspection and supervision of goods vehicles which is not also applied to motor cars. The provisions under the Road Traffic Act (i.e. the 1930 Act) and the regulations made under it, and keen competition between individual operators, and with alternative forms of transport, will demand a high standard of efficiency and proper maintenance of commercial vehicles.' [25]

This objection did not carry much weight with the Commission; the C.M.U.A. was not regarded as representing the road hauliers for most of its membership consisted of traders who carried their own produce, and conditions which prevailed in this section did not necessarily apply to the road hauliers proper. However, which of the allegations about accidents was nearer the truth cannot be decided until the known statistics of accidents have been analysed.

Since 1927, the Annual Reports on Street Accidents, published by the Home Office up to 1936 and subsequently by the Ministry of Transport, have attributed accidents to goods vehicles and to various other types of vehicle.[26] These figures shown in Table II are based on police reports on each accident. Of course, it is exceedingly difficult to allocate each accident *primarily* to one vehicle, which the police had to do on each accident-return, and for this reason Table II may not be an entirely reliable guide to the accident rates of different types of vehicle. But it may be argued that mistakes in allocation probably cancel out; the series result from a large number of observations

[25] Royal Commission on Transport, *Minutes of Evidence*. Appendix.

[26] Figures for the number of vehicles and of accidents are available for the whole of the decade 1919-30, when the accident problem was alleged to have arisen. Unfortunately, it is impossible to estimate the accident liabilities of various types of vehicle by correlation analysis, presumably because the accident rates depended on mileage, petrol consumption and other variables for which we have no information. With X_1, X_2, X_3 as the first differences of the logarithms of the number of accidents, the number of goods vehicles and the number of other vehicles, over the period 1919-30, the following correlation coefficients were computed. $R_{12}=0{\cdot}318$ and $R_{13}=0{\cdot}328$. There is no significant difference between these coefficients but this does not enable us to say that there was no difference between the liabilities of goods vehicles and of other vehicles to cause accidents; the reason for this is that neither coefficient, according to a t test, is significantly different from zero. This suggests that other variables may have had a more important association with the number of accidents than did the number of vehicles.

made throughout the whole country for many years by presumably unbiassed policemen. Moreover, they are certainly more reliable than the isolated observations of witnesses giving evidence to the Royal Commission.

These figures suggest that lorries were slightly more liable to cause accidents than were private cars, but, what is more interesting, they were less prone to accidents than were buses and coaches, their counterparts in road passenger transport. No doubt this difference may be attributed in part to the fact that buses tended to operate in areas where the traffic and the population were more congested, but the fact remains that their accident rate, which was more than three times that of goods vehicles, did not make the same impression on the Commission as did the allegedly high accident rate of goods vehicles.

TABLE II

ACCIDENT RATES OF GOODS VEHICLES, BUSES, COACHES AND PRIVATE CARS, 1927-38

	Accidents attributable to:			Accidents per 1,000 vehicles		
	Goods vehicles '000	Buses and coaches '000	Private cars '000	Goods vehicles	Buses and coaches	Private cars
1927	15	7·4	41	54	176	51
1928	17	8·3	47	55	181	53
1929	19	9·1	48	57	182	49
1930	20	9·7	49	59	182	47
1931	24	10·5	60	68	215	56
1932	25	8·8	61	68	186	54
1933	27	8·7	63	71	190	53
1934	29	8·6	66	70	187	50
1935	26	8·3	62	61	176	42
1936	27	8·5	65	58	173	39
1937	26	8·4	66	54	165	37
1938	25	8·8	71	50	166	36

On the other hand, it can be seen that the accident rate for goods vehicles was increasing until 1933, and then decreased sharply after 1934, the first year of the 1933 Act. Similarly, the accident rate for buses and coaches increased until 1931 and then declined after the operation of the 1930 Act controlling road passenger transport. These figures, therefore, are consistent with the view that the licensing of the road passenger and road haulage industries decreased their accident rates.

But this is not necessarily the explanation. There was no extra regulation of private cars corresponding to the restriction of these two

industries and yet the accident rate for cars also fell after 1931. Indeed, the sharpest falls in all three series occurred between 1934 and 1935 after the Road Traffic Act 1934 had imposed a 30 m.p.h. speed limit in built-up areas and established tests for would-be drivers. For these reasons, it is safer to attribute the decline in the rate of accidents of goods vehicles after 1933 to the introduction of *general* safety regulations, rather than to regard it as the result of excluding the entry of unsafe owner-drivers.

TABLE III

ACCIDENT RATE OF GOODS VEHICLES, 1950-53

	Accidents attributable to goods vehicles '000	No. of goods vehicles '000	Accidents per 1,000 goods vehicles
1950 . .	28	895	31
1951 . .	30	934	32
1952 . .	28	963	29
1953 . .	30	966	30

These figures have not been published in comparable form since 1938, but it has proved possible to extract the required figures for 1950-53 from Ministry of Transport returns in the hands of the Royal Society for the Prevention of Accidents. These are given in Table III. It must be stressed that *more* accidents are caused by goods vehicles nowadays than in the early 1930s when they were considered to be a public menace, though the number of accidents per 1,000 goods vehicles has fallen. This may be explained partly by the 150 per cent. rise in the number of goods vehicles in 20 years, but the fact remains that there is no present day demand to restrict the number of lorries on the roads even though the accident problem created by them is more important. In view of this it is difficult to understand the anxiety caused by lorry accidents at the time of the Royal Commission.

The Ministry of Transport made surveys of fatal accidents for the years 1933 and 1935 and for all accidents in 1937, allocating causes in detail. An analysis of fatal accidents is shown in Table IV. Thus in 1933, for example, there were 6,275 fatal accidents analysed: of these, 318 were caused primarily by vehicles: of these 318, as many as 144 accidents were caused by a mechanical failure or defect: but of these 144 only 29 could be attributed to goods vehicles. That is, of all accidents caused primarily by vehicles (318) only 9 per cent.

could be attributed to poorly maintained goods vehicles. Even this estimate is on the high side for not all mechanical failures can be attributed to poor maintenance.

TABLE IV

CAUSES OF FATAL ROAD ACCIDENTS, 1933-37

	1933	1935	1936-7
1 Total fatal accidents analysed .	6,275	6,289	6,337
2 Caused by vehicles	318	235	206
of which, caused by mechanical failure or defect . .	144	138	117
of which, caused by failure in goods vehicles . .	29	22	18
3 Caused by drivers	1,846	1,996	2,124
of which, attributed to drivers being asleep or fatigued	9	11	6
of which, drivers of			
goods vehicles .	n.a.	1	n.a.
buses and coaches	n.a.	—	n.a.
private cars . .	n.a.	8	n.a.
other . . .	n.a.	2	n.a.

The corresponding percentages for 1935 and for 1937 were 9·3 per cent. and 8·7 per cent. That is, there were no significant differences between the proportions of fatal accidents attributable to poorly maintained goods vehicles *before and after the restriction of entry into the industry*. This suggests that the impressionistic evidence submitted to, and accepted by, the Royal Commission was far from reliable.

While it is not possible to make a similar comparison before and after the 1933 Act of the other allegedly major cause of accidents, namely the fatigue of owner-drivers and other drivers working for small firms, it is possible to obtain some idea of the number of these cases. In 1933, out of the 6,275 fatal accidents analysed, only 9 were caused by drivers being asleep or fatigued. It is not known whether any of these were the fault of goods-vehicle-drivers, but even on the most unfavourable assumption that all 9 were attributable to them, the proportion out of 1,846 accidents caused by all drivers is so low that it is difficult to escape the conclusion that the evidence submitted to the Commission on this point tended to be exaggerated. The corresponding figures for 1935 and 1936 were 11 and 6 respectively. The 1935 figure is analysed in further detail and only one fatal accident was primarily caused by the driver of a goods vehicle being asleep or fatigued.

That there were a few bad cases is not denied here, and in so far as they were used as arguments for the enforcement of safety standards, they may be regarded as reasonable. But they were also used as arguments in favour of licensing entry into the industry, on the grounds that one-man or two-man firms (the typical new entrants) were guilty of using unsafe vehicles and that the restriction of entry would indirectly raise the average standard of road-worthiness of goods vehicles. This was not a legitimate argument. The examination of all goods vehicles would have been sufficient to ensure safety and would have excluded dangerous vehicles belonging to both small and large haulage firms, whereas the licensing of entry discriminated against the small firms and excluded not only the dangerous type of small haulier but also those who would have maintained their vehicles in good condition.

IV. The Co-ordination of Road and Rail Haulage

A typical economic definition of the co-ordination of road and rail transport would be: the minimization of the total costs of carrying goods by road and rail, due allowance being made for conditions of demand. A system of freight rates, reflecting all relevant costs, could allocate traffic between carriers, and free competition could be relied upon to ensure that each consignment is carried as cheaply as possible, providing that the Government removes tendencies towards monopoly, ensures stability, and countervails external diseconomies with suitable taxation policies. The alternative method of allocating traffic, by rules drawn up by a committee, would probably be inferior, partly because no committee could hope to know the cost and demand conditions of haulage throughout the country, and partly because these conditions are continually changing and any set of rules would probably be out of date as soon as it was compiled. Every new cost reducing technique in road haulage would make it advantageous to carry more traffic by road, and the same applies to rail haulage, but no committee could compete with a system of freight rates, which should automatically reflect changing demands and costs, in allocating traffic so that there emerged strong tendencies towards the minimization of haulage costs.

The railway companies argued that competition from road hauliers was unfair and could not produce co-ordination. The trade unions argued that co-ordination could not be reached without nationalization. Both thought that competition between road hauliers and railways was wasteful and that road haulage should therefore be restricted. Neither recognised that the cheapest method of carriage is

often not known until after alternative methods have been tried, or that the railways were faced with a long term decline as a result of the invention of the internal combustion engine.

Railways' Allegation of Unfair Competition

In the 1920s the railways were obliged to act as common carriers, to pay local government rates (which indirectly benefited road users), to publish accounts and statistical returns, to ensure the safety of the travelling public, and to have the wages and conditions of service of their employees determined by a National Wages Board. The road hauliers were not subject to corresponding regulation. There were also other differences; the railways had to grant cheap fares for the armed forces, they had to pay passenger duty, and had to maintain the roads over railway bridges. In short, the railway companies thought they were subject to unfair competition.

Some of the differences were removed after the railway evidence was received by the Royal Commission and before the Salter Committee was convened; maximum hours of work for drivers of public service vehicles and of lorries were stipulated under the Road Traffic Act 1930, and the railways' complaint about local government rates was removed by the Local Government Act 1930. Secondly, some disadvantages were the result of their size; by law they were prevented from showing undue preference to special customers, but the same result would have occurred without the law.[27] Thirdly, some complaints could have been, and ought to have been, removed without restricting the road haulage industry; if the railways had charged rates according to the costs of carriage, instead of charging what the traffic would bear, their working profits may not have been so low.

At the time of the Royal Commission on Transport the railway companies did not use the 'Salter' argument that existing transport facilities were adequate and that entry into the road haulage industry should be restricted because of this:

> '. . . omnibuses and char-a-bancs should be licensed . . . and in licensing these vehicles particular regard should be had to local conditions, the existence of a public need for the service and the possibility of co-ordinating road and rail services . . . With regard to Freight Road Services, the Railway Companies are unable to suggest that these services should be subject to the same conditions.' [28]

When Sir Josiah Stamp was asked to make suggestions for the control of road hauliers, he mentioned 'regulations on undue prefer-

[27] G. Walker, *Road and Rail* (London: George Allen and Unwin, 1942), Ch. VI, p. 128. Also Salter Report, p. 31, para. 96.
[28] Royal Commission, *Minutes of Evidence*, pp. 96-97, paras. 54-8.

ence, or on speed, or on tonnage, or on trailers that may be used and methods of using them, tyres and the like, conditions of service, such as hours of duty and personnel, standards of construction, maintenance of vehicles, and the obligation of third party risks.' These answers were given in December 1928 and the fact that the foremost representative of the railways did not even include the eventual criterion for the licensing of road hauliers, that of the adequacy of existing transport facilities, suggests that the attitude of the railway companies underwent a fundamental change before the Salter Committee met in March 1932.

This change in the attitude was fundamental, but not sudden; traces of the desire to make the adequacy of existing transport facilities the licensing criterion can be found in the comments on the Final Report of the Commission. In their comments, the Railway Companies complained of 'vast passenger and goods transport facilities by road . . . and that by reason of the extensive duplication of transport facilities an uneconomic situation has been created which is detrimental to the public interest.'[29] Their answer to this in the case of the road passenger transport industry was quite clear; the restriction of new entrants if existing facilities were adequate. And yet they hesitated to apply this remedy to the road haulage industry, possibly because of the differences in organization of the two road transport industries. The road passenger section had a nucleus of large combines and the railways had financial interests in them since the 1928 Act empowered them to enter the road transport industry. This section, therefore, not only lent itself to further monopolization, but also ensured that the railways had little to fear if restriction of new entrants increased the power of established operators: in road haulage there were a few large firms but the vast majority of vehicles were operated by small firms. In such circumstances the restriction of entry was both more difficult and more dangerous, for it could have been expected to increase the power of the large and independent road hauliers who were already serious rivals of the railways. An inkling of this fear, together with a lack of interest in the effects of restriction on the would-be entrant, is provided by the cross-examination of Sir Josiah Stamp before the Royal Commission.

> Q. 1656. 'You told us yesterday that you could not contemplate with equanimity a traffic monopoly more powerful even than the one at present in London . . . You say that it was a matter which concerned you much . . . it would also be a matter of very great concern to smaller competitors?'

[29] *Communications received* (Cmd. 4048), p. 33.

Stamp: 'Small unborn competitors who have never put any money in it at all?'
Q. 'Unborn or young.'
Stamp: 'I do not think I should bother much about the unborn competitor. The person who has raised money from the public and is under obligation to them is the most concerned. He is much more concerned than the man who is looking around and says "Shall I buy a Lorry?"'[30]

Any fears of restriction increasing the power of road haulage competitors must have been dispelled by 1932 when the railway representatives supported the Salter Committee's licensing proposals. After these had been given legislative force under the 1933 Act, the railway companies vigorously opposed the applicants for road haulage licences before the Licensing Authorities, on the grounds that 'existing transport were adequate' and that the granting of such licences would lead to 'unnecessary duplication of services.' Such arguments were considered from a technical rather than an economic point of view; if a new road haulier could offer lower freight rates for the same service as the railways, and therefore have the support of the traders, he was nevertheless refused a licence if the railway companies could show that it was technically possible for them to carry the traffic, even though they charged higher rates. Such interpretations of 'duplication' and 'existing facilities' contradicted the very system of co-ordinated transport they were supposed to bring about.

Trade unions, nationalization and co-ordination.

Support for the restriction of road haulage also came from the National Union of Railwaymen and the Transport and General Workers' Union. It was argued that such regulation would bring with it direct benefits in the form of improved conditions of service and wage-rates and would make for co-ordinated transport instead of wasteful competition. But since the direct benefits could have been won[31] without the restriction of entry their argument for restriction is reduced to the alleged tendency for co-ordination.

The system of licensing recommended by the Royal Commission did not go far enough for the trade unions; they wanted the nationalization of all transport services. The latter point was made in the minority report of the Commission, signed by Messrs. Leach and Galton (both Labour Members of Parliament) and by Sir Robert Donald, which claimed that no complete co-ordination of transport

[30] Royal Commission on Transport, *Minutes of Evidence*, p. 136.
[31] Maximum hours of work were stipulated under the Road Traffic Act, 1930 and wages were regulated under the Road Haulage Wages Act, 1938.

could be brought about without unification; though they did not give any details of how it would be achieved with unification.[32]

In their comments on the report of the Commission, the N.U.R. criticised the Commission for not recommending nationalization: 'The evidence tendered by this union and also by the other two railway unions was in favour of the nationalization of transport,'[33] and they maintained that such action would result in the co-ordination of transport. Similarly, the T.G.W.U. supported licensing because

> 'it would be greatly to the advantage of the road haulage industry if it were placed on an organized basis . . . but co-ordination must carry with it public ownership and control and provision should be made for the adequate and direct representation of the work people engaged in the industry through their Trade Union representatives . . .'[34]

The Labour Party was also in favour of the licensing principle though it was opposed to the system adopted in the 1933 Act, as shown by their amendment to the Second Reading of the Bill:

> '. . . that in view of the present chaotic conditions of road and rail transport, the need for cheap and efficient transport service in the interests of the community, and the establishment of fair wages and conditions of employment for those engaged therein, this House cannot assent to the Second Reading of a Bill which establishes regional instead of national regulation, and fails to recognise that in the interests of industry and trade the unification of all transport services under national ownership and control is a vital necessity.'[35]

These quotations show that the nationalization of all transport was advocated as a solution of the problems of road haulage, of the instability in the industry, of the excessive hours and poor conditions of service, of low wages, and of co-ordination between road and rail. Fourteen years later, under the Transport Act 1947, inland transport was nationalized. Yet nobody would claim that this produced transport co-ordination. It is exceedingly difficult to understand the trade unions' claim that this would follow, partly because no detailed arguments were offered in its support, and partly because it is almost axiomatic in economics that a price system allocates resources under nationalization and private enterprise alike, leading towards (or away from) co-ordination irrespective of whether the assets of the industry are owned by the State or by individuals. That is, nationalization is irrelevant to the problem of co-ordination and has to be proposed or opposed on other grounds. In short, the licensing of road hauliers

[32] Royal Commission on Transport, *Final Report*, pp. 217-234.
[33] *Communications received* (Cmd. 4048), p. 65.
[34] Ibid., p. 70 and 73.
[35] *House of Commons Debates*, 3 March 1933, p. 349

could not be supported on the grounds that it led towards transport co-ordination, in spite of the opinions of the railway companies and the trade unions.

V. Conclusions

The restriction of road haulage in 1933 could not be justified by the arguments that it was unstable, that its accident rate was excessive, or that its restriction would lead to the co-ordination of road and rail haulage. It certainly cannot be justified in the present era of high employment and high prices. Even the Salter Committee [36] recognized that its scheme should be applied with great care and should reflect the needs of different periods, which reinforces the case for the repeal of the licensing provisions of the 1933 Act. Such repeal would raise the question of damage to existing holders of licences, which have a market value and which may have been bought in the belief that the licensing will always be with us, but it should not be difficult to devise a scheme of compensating existing licensees, possibly along the lines suggested by Messrs. Walters and Sharp.[37]

However, the difficulties associated with the abolition of licensing are minor in comparison with the advantages gained. Road haulage could be taken out of politics and the size of the nationalized sector could be determined by market forces. Supporters of nationalization would surely be confident that British Road Services would expand in competition with the private sector, for it is in a powerful position as the largest road haulier with a nation-wide organization. Opponents of nationalization may think that British Road Services would be starting with unfair advantages, but would surely feel that this was a price worth paying for the end of the nationalization, denationalization, and renationalization game.

P. E. Hart

University of Glasgow

[36] Salter Report, op. cit., p. 33, para. 107.

[37] A. A. Walters and C. H. Sharp, *A Report on Traffic, Costs and Charges of Freight Transport in Great Britain.* (To be published.)

URBAN RENEWAL IN GLASGOW

THE salient features of Glasgow's housing problem are all too familiar. The rapid growth of population in the last century, associated with industrial development in the Clyde basin, and the waves of immigration from the Highlands and Ireland have resulted in a high degree of concentration of Scotland's population in the city, and migration since 1931 has served only to stabilize the total. The 1951 Census showed 21 per cent. of Scotland's population living in Glasgow, a degree of concentration much higher than Greater London's 8 per cent. of the population of England and Wales. Nearly three persons out of four are housed in the congested central areas of the city; the old closely-built tenements in those areas consist of houses which are too small, poorly equipped and badly overcrowded. The resulting net residential densities are higher than in any other urban area of the country and are estimated at an average of 400 persons per acre. Half of the houses in 1951 were of one or two rooms; a quarter of the population lived more than two to a room.

Estimates of the size of the rehousing problem involved vary considerably. The proposed redevelopment of the central area is expected to displace some 200,000, but the total displacement is frequently quoted at 300,000. These figures must be taken in conjunction with the physical limitations of Glasgow's site. Further expansion is virtually impossible, either because of the nature of the terrain, or the close proximity of the built-up areas of adjoining towns, and no more new building sites remain within the city boundaries. Hence the proposals to decant large numbers of the population outwith the area entirely.

The problem was first comprehensively studied and this solution put forward as inevitable in the Report of the Clyde Valley Regional Planning Committee in 1946. This estimated that 500,000 people, or about half the population, would have to be moved from the congested centre and that no more than half of these could be housed on the outskirts. Acceptance of this view was by no means immediate. The overwhelming shortage of houses and the relative ease of building on the remaining sites on the periphery prompted a resumption of the pre-war policy. Only the harsh reality that no more vacant housing sites remained turned attention to redevelopment of the old central areas and raised overspill to the status of official policy.

The Hutchesontown-Gorbals Redevelopment Scheme is the first instalment in the renewal of the central area. It involves the virtual

clearance of the area and its redevelopment as a residential district to rehouse about one-third of the existing population at an estimated cost of £13m. In due course, other areas will be similarly treated, while in some cases the less drastic treatment of rebuilding block by block will be applied. Over the next 20 years, 100,000 houses, or about one-third of the total in the city, will be cleared and replaced by 40,000 houses. At the same time, the Corporation have concluded a number of agreements with Local Authorities throughout the length and breadth of Scotland to accommodate Glasgow's surplus population along with a suitable proportion of industry. The population are being asked to volunteer for transfer to one of these areas, and it is hoped that sufficient of the city's industry will be able and willing to go with them.

Glasgow's overspill policy as at present conceived is basically a housing policy and an offshoot of the acute housing shortage manifested in the size of the present waiting list and the need to redevelop the central areas at lower densities. It is true that it is spoken of as a movement of population and industry, and that the agreements with other Local Authorities will only be implemented if industry is persuaded to move with the people. It is also true that a considerable number of firms will be compelled to move from their existing sites as the central areas of the city are cleared and redeveloped, and that some financial compensation will be paid. But there is no evidence that the overspill policy is based on any carefully prepared plan for industry or on close investigation of the types of firm involved and the possibility that they can move. Even more important, there does not appear to have been any attempt to study the economic implications of the policy for Glasgow and for Scotland as a whole.

The economic advantages to industry of specialisation and concentration have long been known as real and important, and while the disadvantages are no less real, they are generally judged to be less important and by no means inevitable. The advocates of a more equal distribution of industry and population throughout the country can make a strong case for the advantages to industry of clean, healthy surroundings and room for expansion, but the disadvantages must be examined before the case can be judged and these may prove to be the more important. Such factors as distance from markets, high transport costs, inadequate labour supply, difficulty of contact with other firms in related industries, and lack of the financial, technical and teaching facilities of a large city must all be weighed in the balance.

In considering the impact of industrial dispersal on Glasgow's own position, it must be remembered that the city's functions as a commercial and financial centre provide a considerable part of total employment and these, as well as its industrial structure, could be adversely affected. The scale of displacement of people and industry contemplated and the importance of the Glasgow area to the Scottish economy make the issue a national rather than a purely local one, and it is at this level that inquiry is necessary.

It is difficult, if not impossible, to judge the final economic impact of Glasgow's policy. There are several possibilities:

(i) The displacement contemplated will not be achieved because industry will not move in sufficient quantities to the receiving areas offered;

(ii) Since major heavy industries cannot move, the effect of the policy will be to make the remaining economy more dependent on them;

(iii) Many of the small industries which together make up quite a large proportion of Glasgow's economy will simply close down. This seems the likely outcome for most of the firms displaced by the Hutchesontown-Gorbals Redevelopment Scheme.

Glasgow is the supreme example of extreme urban concentration, for which the Barlow Commission recommended movement out of population and industry, and at the same time, it is the centre of the major part of the Scottish Development Area, an area strongly specialised in the heavy industries and with a past record of heavy unemployment, for which the Commission recommended the movement in of new industries. The present policy means that established industries will be given the chance of moving to another part of Scotland or closing down, but not the choice of moving to one of the industrial estates in the Glasgow area. These are reserved for new industry coming in, and only by establishing a completely new line can a Glasgow firm qualify. This may strike at the policy of industrial diversification to which importance is still attached. The firms most likely to be able to move away from Glasgow are likely to be in the very industries that would provide a more diversified structure and may be similar to those which Development Area policy is trying to attract from other parts of the country. Would it not be possible, and preferable, to accommodate some of the displaced firms in the industrial estates?

The reasoning so far would seem to suggest that Glasgow is faced with two equally unacceptable alternatives: on the one hand, it can choose to rehouse a small population at the densities necessary to

give reasonable living conditions, according to modern standards, and at the same time commit economic suicide; or, on the other hand, it can accept deplorable housing conditions, high densities and overcrowding, along with the chance of economic survival and growth. But are these in fact the real alternatives? It is true that the economic consequences of the proposed policy are feared rather than proved, but they still have to be disproved. On the housing question itself, however, there are grounds for questioning the basis of policy and suggesting another alternative, as outlined by Mr. Brennan in his *Re-shaping a City*.[1]

Mr. Brennan shows that there are three ways of measuring the size of Glasgow's housing problem:

(i) The detailed redevelopment plans for the central areas will replace 100,000 houses with 40,000 and suggest an overspill of 200,000 people;

(ii) The application of accepted standards for residential density so as to meet reasonable living standards is often claimed to justify a figure of 300,000;

(iii) The size of the waiting list for houses is a possible, although suspect, measure of need and the present total of 120,000 households would seem to support the larger estimate of 300,000 people.

A general analysis of the additions to the waiting list over the period 1945-55, combined with a detailed scrutiny of a sample of the Govan residents on it, throw doubt, however, on the value of the waiting list as an instrument of planning policy. 'It would be unrealistic', Mr. Brennan writes, 'to assume that every name on the waiting list represents a present situation of grave hardship or that it necessarily represents an effective demand for a new house at present rents. There would be even less justification for assuming that this demand would be effective at the higher rents which are likely to prevail in the future'.[2] Taken in conjunction with the evident preference for city living shown by a considerable number of the present residents of both Govan and the Gorbals, this suggests that it is worth thinking again about the possibility of improving houses in the central areas, and reshaping the city. The present housing may be neither adequate nor good, but there is a case for urban planning at higher overall densities than those at present regarded as the maximum consistent with reasonable living conditions.

Further evidence that the size of the problem may be less than

[1] T. Brennan, *Re-shaping a City*, The House of Grant (Glasgow, 1959). See also his 'Gorbals: a Study in Redevelopment', *Scottish Journal of Political Economy*, June 1957, pp. 114-26.

[2] Loc. cit. p. 23.

is usually assumed is to be found in the thinning out of population from the central areas in recent years. It is estimated that between 1951 and 1958 the fourteen inner wards lost at least 70,000 of their original population of 420,000. During the same period, the average density of occupation in those areas fell from 1·6 persons per room to 1·3. The accepted standard for redevelopment is 1·1 persons per room, while the new Pollok estate on the outskirts has, surprisingly, a density of 1·45 persons per room. Density of occupation is only one aspect of overcrowding and poor living standards, and it may be argued that 1·45 persons per room in a house with a bathroom and modern facilities involves less hardship than 1·3 persons per room in an old house with no facilities. Nevertheless it does suggest that the problem is changing.

From the point of view of overall net residential density, the Clyde Valley Regional Plan suggested a maximum of 120 persons per acre for inner urban development, and Glasgow's redevelopment plans appear to accept something between this and 200 persons per acre as the desirable maximum, in place of the existing 400 persons per acre. In addition, considerable emphasis was placed in the Plan on the need to provide adequate communal facilities, schools and open spaces, thus reducing the gross residential density. In the Hutchesontown-Gorbals Redevelopment Area, designed as a residential area and providing for about one-third of its former population, the acreage devoted to schools is more than three times the previous figure, while other claims such as open space, community facilities, shops, etc., are fractionally increased. Although reasonable living standards in the central areas require a considerable reduction in persons per acre, as well as persons per room, one cannot help questioning the extent of the area devoted to uses other than housing. In particular, the area devoted to schools in the Gorbals scheme seems surprising in view of the reduced population to be housed there and the fact that it is likely to be relatively small families with several adult earners who will choose to stay in the centre.

If the overspill problem, although real, is smaller than has been assumed it seems also worth reconsidering where the displaced population should go. The Clyde Valley Regional Plan's estimate that 500,000 people would have to be moved, and that only half of these could be rehoused in sites on the outskirts, was based on the assumption that certain areas on the outskirts would be reserved as part of the green belt. Considerable building has in fact taken place in some of the areas so designated. However undesirable this has been from the planning point of view, it must have reduced the size of the

problem. The Clyde Valley Plan also recommended the building of four new towns, only two of which have in fact been undertaken, East Kilbride and Cumbernauld. At least one of the others, that suggested for Houston, could make a substantial contribution to the problem and would seem preferable, from the point of view of industry, to the general dispersal throughout the country at present contemplated.

S. C. ORR

RECENT ECONOMIC TRENDS

Demand for Ships, April 1959

The demand for ships may be considered to depend on three factors: the amount of tonnage scrapped or lost, the need to expand carrying capacity when world seaborne trade is increasing (or contract it when the reverse applies), and the effectiveness of shipping in carrying available cargoes. The list is not, of course, complete, and the three factors are not independent of one another as we shall see, but it provides a useful framework for considering how the demand for ships is likely to develop in future years. It is the purpose of this note to set out how it appeared reasonable to view the situation in April 1959, starting with estimates of the tonnage that it might be expected would be withdrawn from service on the basis of past experience.

Wastage rates

In a previous study,[1] estimates were made of wastage rates in the period 1885-1914 (supplemented by data for 1860-1884) and for the inter-war period; some post-war figures were also given for comparison which have been brought up-to-date for the purposes of the present study. Broadly speaking it appears from these figures that both before the first world war and in the interwar period ships lasted on the average about 33 years. There was a wide dispersion about this average figure but there appears to be little evidence of any striking change in the longevity of ships over almost a century of experience. This is not to say that the longevity of ships is independent of country of ownership or economic conditions, to mention only some obvious variables; and it appears also that non-tanker vessels have an appreciably longer life than tanker vessels so far as can be judged from what has happened in the past five years, although no account could be taken of this in arriving at earlier assessments of wastage rates.

Quite apart from the interpretation of data calculated for past periods, it is very difficult to judge how far previous experience is relevant to present or future conditions. It is sometimes maintained that technical progress moves more rapidly now than it did 50 to 100 years ago, and that in consequence obsolescence occurs rather earlier in the life of capital instruments than formerly. Again, durability may change as new designs are introduced, or altered economic con-

[1] See J. R. Parkinson, 'Ship Wastage Rates'. *Journal of the Royal Statistical Society*, Series A (General), Vol. 120, Part I, 1957 (pp. 71-83).

ditions hasten or retard the scrapping of vessels. But a broad view must be taken in attempting to use past experience to assess the course of future events and too much attention cannot be paid to methodological niceties.

In the following table, it is assumed that the wastage rates of vessels at present in the world fleet will approximate to those experienced in the interwar period, bearing in mind that marine casualties will be rather lighter and that tankers have a rather shorter life than non-tanker vessels partly for technical reasons.

TABLE I

WASTAGE RATES APPLIED TO THE WORLD FLEET, MID-1958

Age group (years)	*Non-tanker vessels*[a]			*Tanker vessels*		
	Tonnage (million gross tons)	Assumed wastage rate per year (per cent.)	Calculated wastage (million gross tons)	Tonnage (million gross tons)	Assumed wastage rate per year (per cent.)	Calculated wastage (million gross tons)
0 - 5	15·5	0	0	12·6	0	0
5-10	10·7	1	·1	8·7	1	·1
10-15	21·3	1½	·3	5·8	1½	·1
15-20	19·3	2	·4	3·5	2	·1
20-25	3·2	3	·1	1·2	5	·1
Over 25	14·6	7	1·0	1·8	10	·2
TOTAL	84·6		1·9	33·6		·6

[a] Vessels in the United States reserve fleet, which includes only a few tankers, appear mainly in the age group 10-15. Since it is doubtful if these vessels will be replaced, it might be proper to reduce calculated wastage rates by, say, 0·2 m. g.r.t.

The calculations could be done on a variety of assumptions. In the interwar period, wastage rates were unusually high in the mid-thirties, but there appears to be no particularly good reason for believing the interwar years to be uncharacteristic; depression may encourage the scrapping of ships in some years, but it may also make owners less willing to scrap and replace vessels and more inclined to cling to what they have got, particularly if it is difficult to secure investment funds.

The main conclusion to be drawn from the table is that, on the basis of interwar experience, it would be reasonable to expect only about 500,000 gross tons of tankers and 2 m. gross tons of dry cargo vessels to be scrapped or lost each year on the average. But even if it were assumed that the proportion of vessels scrapped in the various age groups rose to the level occurring in 1933, when scrapping was at a

peak following the years of most acute depression, no more than 750,000 gross tons of tankers and 3 m. gross tons of non-tankers would be removed from the register, either because of scrapping or marine casualty.

The situation is complicated by the existence of 7-8 m. gross tons of shipping laid up. Is this shipping to be regarded as tonnage awaiting profitable employment or as tonnage awaiting a rise in scrap prices before being sent to the breaker's yard? Of dry cargo vessels laid up in United Kingdom ports at the beginning of February 1959, 10 per cent. were already overdue for special survey even after allowing a year of grace and a further 15 per cent. were in a year of grace. It is estimated that by next October about one-third of the ships laid up will be due or overdue for survey.[2] This suggests that a substantial proportion of the tonnage at present laid up will ultimately be scrapped and should not be regarded as overhanging the market.

This raises another question. Is the tonnage destined for the shipbreaker's yard to be regarded as forming part of the tonnage that it might be expected would be scrapped in the next five years or so, or is it to be regarded as tonnage which might have been scrapped in earlier years if the demand for ships had been weaker and delivery delays shorter? During most post-war years, available shipping has been no more than adequate for requirements and in some years it would have been quite inadequate if the ships had not been released for service from the United States reserve fleet. It is reasonable to assume that this has tended to keep ships in service longer than if supply and demand had been more in balance.

Some support for this view is given by a comparison of the tonnage lost or scrapped in postwar years with the tonnage that would have been lost if the average experience of the interwar years had applied. It appears that some 6-7 m. gross tons of ships may have had their life on the register prolonged beyond what is to be regarded as normal by this test. On the other hand, the proportion of tonnage scrapped or lost in the years 1953-58 in the various age divisions is not much different from that scrapped in the 1920s before the great depression hastened the demise of vessels.

There are, however, certain special features in the situation that lend support to the view that scrapping should be accelerated in the next few years. In the decade following the first world war, ships built during the war were rather freely scrapped. Is it now likely that

[2] From a market report issued by S. C. Chambers & Co., quoted in *The Journal of Commerce and Shipping Telegraph*, 5 March, 1959.

Liberty or Victory vessels will follow a similar course? The answer to this depends very much on the date at which it is asked. When the Suez Canal was closed, freight rates were high, and the Liberty vessel appeared to be an inspired compromise.[3] More recently its value has fallen from £650,000 paid in November 1956, to about £70,000,[4] a continuation of depression in freight markets might drive the price still lower, and Liberty vessels out of commission. If this were so, perhaps as much as 10 m. gross tons of ships, some of which are already laid up, might be withdrawn from service, and over a period of years this might be regarded as an addition to normal wastage. At present, however, the value of a Liberty vessel is still considerably in excess of its scrap value, and it may be suspected that a rise in freight rates would once again underline the inspired compromise of its design.

Unlike Liberty vessels, very few tankers are to be found in the United States reserve fleet, but some 2-3 m. gross tons are laid up in other places. The main reason for supposing that tankers may be scrapped rather earlier than usual in the next few years lies in the fact that the total running costs of a supertanker per ton-mile of cargo carried may be less than the running costs of smaller vessels. To some extent this has been reflected in the size of tankers scrapped in recent years; in any given age group, the smaller tankers appear to be the first to go. But there appears little in the figures to indicate that supertankers will oust a substantial proportion of smaller vessels at all readily. A large number of small as well as large tankers continue to be required.

The results of our survey of the tonnage of vessels likely to be withdrawn from service has not been very conclusive. It appears unlikely that more than 2½ m. gross tons of shipping will be withdrawn from service or lost per year over the next few years. The 7-8 m. gross tons of shipping already laid up may in effect represent the whole of the withdrawals likely to take place for some time; on the other hand, part of this tonnage may represent withdrawals delayed first by high freights in conditions of scarcity and more recently reluctance to sell vessels for scrap at the prices being offered for them in present market conditions.

The demand for ocean transport

It is exceedingly difficult to judge how the demand for ocean-going transport is likely to evolve over the next few years. From the

[3] *The Times*, 11 December, 1957.
[4] According to a market report by Harley, Mullion & Co., Ltd.

end of the war until 1957, demand increased rapidly, especially for tanker transport:

TABLE II

TANKER CARGOES

1950	1951	1952	1953	1954	1955	1956	1957	1958
(Million metric tons and percentage increase compared with previous year)								
225	255	285	295	320	350	390	420	445
—	*13*	*12*	*4*	*8*	*9*	*11*	*8*	*6*

Source: 1950-57, *United Nations Monthly Bulletin of Statistics*, January 1957 and 1959. 1958, Institute of Shipping Research, Bremen, as given in the *Fifth Annual Report on Maritime Transport*, OEEC, January 1959, p. 38.

Presumably oil consumption will continue to increase substantially in 1959 and subsequent years, but there appears to be considerable doubt whether it will achieve the rate of increase that was foreshadowed even two years ago. The OEEC in its report, *Oil, The Outlook for Europe*, published at the end of 1956, envisaged that oil imports into Europe would more than double between 1960 and 1975, and appeared to be thinking of an average arithmetic rate of increase of about 8 per cent. per year.

Europe's sea-borne imports of oil account for about one-quarter to one-third of the total and they are likely to form a substantial part of any increase in oil consumption in future, but a figure of 8 per cent. per annum is no longer a reasonable measure of the likely increase in tanker cargoes in world trade. The decision of the United States administration to curtail tanker imports in the interests of home producers and the discovery and exploitation of oil in the Sahara which is likely to be piped to Europe, are both factors making for a smaller demand for tankers even if oil consumption does continue to increase on a substantial scale. There is thus some ground for assuming that tanker cargoes will not increase by much more than 5 per cent. per annum over the next decade, with, say, 7 per cent. per annum representing an upper limit.

For dry cargoes a smaller rate of increase appears to be likely:

TABLE III

DRY CARGOES

1950	1951	1952	1953	1954	1955	1956	1957	1958
(Million metric tons and percentage increase compared with previous year)								
300	360	350	360	390	450	490	510	460
—	*20*	*−3*	*3*	*8*	*15*	*9*	*4*	*−9*

Source: As above.

It was only in 1954 that dry cargo trade regained the level of 1929 although world manufacturing output (excluding the United States and Russia) very nearly doubled in the same period. Between 1950 and 1957, on the other hand, both rose by about two-thirds, and it appears that the two may be roughly keeping in step in the postwar period, although not necessarily from year to year. Manufacturing production has increased rather slowly in recent years: between 1953 and 1954 and 1954 and 1955, it increased by 9 per cent., between 1955 and 1956 by 6 per cent., and between 1956 and 1957 by 5 per cent., while in 1958 it appears to have increased by only 1-2 per cent. An increase in manufacturing output in the world (excluding the United States and Russia) of 5 per cent. per annum in future years seems on the high side and it is by no means certain that it would cause an increase in world sea-borne trade in dry cargoes at the same rate. From 1890 to 1913 the increase in manufacturing output and world trade was 3 to 4 per cent. per annum, and few would expect a much greater increase over a period of similar length.

Even if world trade increases at this rate it does not follow that an increase in the demand for ocean transport of dry cargoes will be paralleled by an increase in the demand for coastal services or passenger transport. For passenger vessels, competition from air transport is likely to continue to make considerable inroads into potential markets. On the Atlantic routes this has not meant, apart from 1958, that the number of passengers travelling by sea has diminished; there has been an increase, though of only some 3 per cent. per annum, against an increase in traffic by air of 18 per cent. per annum between 1952 and 1958; but since more passengers are carried per gross ton in newer ships, the demand for passenger tonnage may actually be diminishing.

It may be that little further increase in passenger traffic is to be anticipated in future years, because of increasing competition from air transport; but the comparative economics of sea and air travel is still in the melting pot and sea transport has still fully to adapt itself to competition from the air. For the sake of simplicity it is assumed in making estimates of the future demand for ships that all classes of vessels, passenger vessels, coasters and other types not engaged in ocean transport of dry cargoes, will expand at the same rate.

If we assume that tanker cargoes expand at 6 per cent. per annum and dry cargoes at 4 per cent. per annum on the average (and most observers would regard these as fairly optimistic assumptions about future trends) we arrive at a demand for tankers of about $1\frac{1}{2}$ m. gross tons per year and a demand for non-tanker vessels of about $2\frac{3}{4}$ m.

gross tons per year (a variation of the increase in total trade of 1 per cent. makes a difference to the answer of 1 m. gross tons per year).

The increasing efficiency of modern tonnage

Taking a long view, and neglecting the apparent surplus of tonnage laid up, it appears on certain assumptions that the demand for ships may be of the order of 7¼ gross tons of shipping of the same efficiency as that in the world fleet in 1959. A gross ton of shipping built today can be used to carry more goods than a gross ton built 10-15 or 25 years ago. Ships have been more highly powered year after year, and in consequence average speeds have increased. For a vessel capable of 10 knots, each additional knot increases its carrying capacity while at sea by 10 per cent. or by, perhaps, 7 per cent. allowing for the time in port.

It can be inferred from estimates of the overall utilisation of the world fleet published in the *United Nations Monthly Bulletin* in March 1956, that the average carrying capacity per deadweight ton of a dry cargo vessel in the world fleet in 1954 was about 10 per cent. greater than in 1929. It follows from this kind of argument that, say, 6½ m. gross tons of shipping per year would serve both to replace vessels withdrawn from service and provide for an increase in world trade of the magnitude considered above.

This is, however, a view over a number of years without reference to the immediate situation. We have seen that some 7-8 m. gross tons of shipping, equivalent to about 7 per cent. of the active world fleet, is laid up. Some of this will not be used again, but not all is in this category. Tonnage at sea is being used less intensively than it would be if demand for shipping space were strong. In conditions of depression more time is spent in looking for cargoes, ships are less fully loaded and they are operated at less than maximum speeds. The extent of the total under-utilisation of the world fleet must be a matter for surmise; but if the need arose it would not be surprising if 5-10 per cent. more cargo could be carried without having to put all laid-up ships back into service.

In 1957 8½ m. gross tons of shipping were launched and in 1958 9¼ m. gross tons. Delivery rates may well fall off in 1959 and in 1960, but sufficient tonnage was still on order in April 1959 to permit the launching of 9 m. gross tons in both years. If this were to occur, a growing surplus of shipping would accumulate and by the end of 1960 as much as 15 per cent. of the world's fleet might be laid up unless either scrapping proceeded rather more quickly and more completely than appears likely at present. At this point the demand for new

ships would almost dry up and deliveries in 1961 and 1962 might drop to as little as 1-2 m. gross tons.

It is to be hoped that the situation will not develop in this alarming fashion. Older and obsolete vessels may speedily and completely be removed from service; fewer vessels have been scrapped in the postwar period than it might have been reasonable to expect. A rather larger increase in trade than has been envisaged, perhaps as recession recedes, cannot be ruled out, though the assumptions made do not err on the side of pessimism. But the most likely evolution of events as it appears in April 1959 is that, as existing orders are worked through and some are cancelled, the world shipbuilding industry will enter a period when a substantial cut-back in output will be unavoidable.

J. R. PARKINSON

University of Glasgow

A Note on the Composition of the Working Population

I

In the last half century the working population has maintained a remarkably stable ratio to total population. The Census figures for England and Wales show a rise from 45·2 per cent. in 1911 to 46·5 per cent. in 1951. For men alone the change was from 66 to 67 per cent. and for women alone from 26 to 28 per cent. The stability of these figures conceals, however, the operation of diverse factors—changes in age distribution, in the retirement habits of old people, in the proportion of single and married women in different age groups, and in the proportion of married women at work. This note considers the operation of these factors in relation to the Census returns of 1911, 1931 and 1951, and the trends of the last few years. Census figures are given for England and Wales rather than Great Britain because the Census returns are separate for England and Wales and Scotland, and the former is the larger partner.

II

For the male population the major factors over the forty years between 1911 and 1951 were the declining proportion of young people below working age, and the growing proportion of the elderly (Table I). In 1911 63 per cent. of the male population were in the 15 to 65 age group. By 1931 the declining number of young people had more than offset the growing proportion of the elderly, and the population in the working age groups grew to 68 per cent. In 1951 it fell again slightly to 67 per cent. with a continuing increase in the older age group. Changes in age distribution were therefore responsible for moving another 5 per cent. of the total population into the working age groups between 1911 and 1931, and for a 4 per cent. shift between 1911 and 1951.

In 1911 the school leaving age was 10, in 1931 it was 14, and in 1951 it was 15. The lower school leaving ages in the earlier years had a diminished effect because quite high proportions of children below 15 were not actually working. Thus, though there were 1,748,000 boys between 10 and 15 in 1911, the working population was only enhanced by 320,000 of them, or less than 2 per cent. of total population. Slightly more than half of the boys between 14 and 15 in 1931 were at work (1 per cent. of total population). The numbers of full time students between 15 and 65 and those returned as

not gainfully occupied have both increased since 1911: these groups amounted to about 2½ per cent. of total population in 1911 and about 3 per cent. in 1931 and 1951.

TABLE I

MALE AGE DISTRIBUTION—ENGLAND AND WALES

(Numbers in thousands)

Age group	1911		1931		1951	
	No.	%	No.	%	No.	%
Under 15 . .	5,531	32	4,808	25	4,949	24
Between 15 and 65	11,105	63	13,052	68	14,095	67
Over 65 . .	810	5	1,273	7	1,972	9
Total male population .	17,446	100	19,133	100	21,016	100

The number of males over 65 and still at work, expressed as a percentage of total population, did not grow between 1931 and 1951: and, at 3 per cent. of total male population, it was not much greater than the 2½ per cent. of 1911. Though there are now many more in this age group there has been a continued decline in the proportion who work, especially in the proportion of over 70s working.

In sum, the male working population was about 67 per cent. of the total male population in 1951 against 66 per cent. in 1911. Changes in age distribution favoured a growth in the working population but this has been somewhat offset by a higher school leaving age and by a smaller proportion of old people working. The proportion of working to total population among males has been remarkably stable.

III

We can also begin discussion of the female working population by looking at age distribution changes (Table II). 65 is taken as the upper age limit of the working group rather than 60, which is now the conventional figure, because the 1911 statistics are more conveniently available in this form. The changes here are much the same as for the males, except that the older group has grown more and, largely due to this, the younger group has declined more in percentage terms. The net effect is again to put a higher proportion into the working age groups in 1931 and to reduce the proportion in 1951, while still leaving it above the 1911 level. For females as for males, the effects of changes in school leaving ages have been mitigated by the numbers in the relevant age groups who were not at work at the

earlier dates. Only 182,000 females between 10 and 15 (or 1 per cent. of total female population) were at work in 1911, and only about 120,000 between 14 and 15 (less than 1 per cent.) in 1931.

TABLE II

FEMALE AGE DISTRIBUTION—ENGLAND AND WALES

(Numbers in thousands)

Age group	1911		1931		1951	
	No.	%	No.	%	No.	%
Under 15 . .	5,520	30	4,712	23	4,743	21
Between 15 and 65	12,055	64	14,418	69	15,146	67
Over 65 . .	1,070	6	1,689	8	2,853	12
Total female population .	18,625	100	20,819	100	22,742	100

For the working age groups of women the main dividing line in attitudes to paid employment is that of marital status. The proportion of single women in the 15 to 65 age group fell from 41 per cent. in 1911 to 38 per cent. in 1931 and 26 per cent. in 1951. This does not represent a change in expectation of marriage so much as in age of marriage, since recent reductions in age of marriage have skimmed off more of the single women at an earlier date. Also, the age distribution of women within the 15 to 65 age group now, more than in 1911, favours the upper age groups, which have always had a higher proportion of married women. Among single women the proportion who have stayed out of paid employment has much declined. In 1911 29 per cent. of single women between 15 and 65 were not working; in 1931 this proportion was reduced to 24 per cent.; while in 1951 only 20 per cent. of single women were not working, and, moreover, this reduced proportion contained a larger element of full time students.

The jobs taken by single women have also altered greatly. The numbers of domestic workers have declined and the numbers of professional and clerical workers have much increased since 1911. Within wage-earning occupations the range of choice has widened especially to take women out of the textile and dressmaking industries which previously dominated their industrial employment and into a much wider range. These changes have of course been associated with a greater degree of acceptance of single women at work, which has altered the proportion of those employed. At the upper age levels the proportion of single women still at work after 65 declined a little between 1911 and 1931 from 22 per cent. to 20 per cent., but fell con-

siderably to 12 per cent. in 1951. The figures for the 60 to 65 age group are not available for 1911: in 1931 54 per cent. of this age group were not working, and in 1951 65 per cent. were retired.

The growth in the proportion of married women in the 15 to 65 group of women might be expected to reduce the female working population and has in fact done so; but, at the same time, the proportion of married women at work has grown. In 1911, 11 per cent. of married women between the ages of 15 and 65 were at work, while in 1931 the proportion had risen to 12 per cent., and in 1951 it had risen very considerably to 24 per cent. The proportion of widows between 15 and 65 who were actually working, though larger than that of married women at both dates, did not, however, increase between 1911 and 1951, because the widows tend nowadays to be older. The proportion of married (and widowed) women at work after 65 was rather lower than for single women at all dates, but declined from 10 per cent. in 1911 to 4 per cent. in 1951. In 1931 the proportion of married women between 60 and 65 at work was less than 6 per cent.: in 1951 it had risen but was still under 8 per cent.

We can now sum up these changes in the streams contributing to the female working population in terms of proportions of total female population. In 1911 64 per cent. of females were between 15 and 65, while in 1951 a smaller proportion of children and a higher proportion of old people resulted in 67 per cent. of total female population in the working age groups. In 1911, 41 per cent. of women in this age group were single and 29 per cent. of them were not working, while in 1951 these percentages were 26 and 17 per cent. The result was that working populations of 19 per cent. of total female population in 1911 and 14 per cent. in 1951 were contributed by single women. The higher proportion of married women in 1951, and the higher proportion of them actually working, resulted in a contribution to working population from married women between 15 and 65 of 11 per cent. of total female population against 3·5 per cent. in 1911. The contribution from widows was about 2 per cent. at each date. The lower school leaving age in 1911, offset by the high proportion who were not in fact at work between 10 and 15, added about 1 per cent. of total female population to the working population in 1911. The women over 65 who continued at work added about 1 per cent. in 1911 and rather less in 1951. The sum total of these various factors is that 26 per cent. of the total female population were at work in 1911 and 28 per cent. in 1951.

Dr. C. E. V. Leser has also worked through the changes in the female working population since 1911 in a longer and technically

more detailed discussion than this.[1] He reaches very similar results. His most important conclusion is that 'if there had been no change in the proportion of occupied to total women in each age and civil status group, the changes in the demographic structure of the female population would have more than wiped out the gain in female labour potential derived from the population increase during the period 1911-1951.' In other words, women have become relatively older, have married younger and have become less likely to be widowed while still young. These factors would have reduced the female working population had not the proportion of single women at work gone up, and, above all, had not more married women in the working age groups come out to work. There are, in fact, almost 1·5 m. more married women occupied than there would be at the 1911 habits of going to work.

IV

How have the factors that caused changes in the 1911 to 1951 period [2] operated since 1951, and does any prediction seem possible?

Some considerations can be dimissed fairly quickly as of small effect. For example, the school leaving age has not been altered since 1951. Moreover, it seems clear from past experience that any such changes in the future will be restricted in their effect on the working population because of the numbers of older children already in full time education. The reduction in the age of marriage which created the marked shift from single to married women between 1911 and 1951 has stopped for the present. It might start again, but presumably the social forces of the post war period and of full employment have now had their effect, and further reductions would come closer against the education and training ages. There is not likely to be a large change in the ratio of widows to married women in the working age groups since, except for the over 55 figures, the death rates of their husbands are now very low. Almost all men of working ages who are not in full-time education can be counted as part of the working population. It seems reasonable to infer that there are good reasons to explain the cases of those who are not available for work, and

[1] C. E. V. Leser, 'The Supply of Women for Gainful Work in Britain.' *Population Studies*, November 1955.

[2] Two other factors deserve brief mention for the sake of completeness. The armed forces who are included in the working population but are not available to the civilian labour force numbered 201.000 in 1911 and 545.000 in 1951. The number of part time female workers included in the total number of female workers in 1951 was 780.000, of whom 633.000 were married. No figures are available for earlier years but this seems likely to be a large increase.

that we need expect no marked change from this direction. A rather larger proportion of single women of working ages are not in gainful employment. But, the duties which can keep single women at home looking after the house are a familiar feature of our society, and, given the increasing proportion of old people, and the shortage of domestic servants, there seems no reason to suppose that the present proportion (14 per cent of single women between 15 and 65) is likely to be much reduced. All these considerations therefore seem to be of small import. We are left with three factors to consider: changes in age distribution, changes in the proportion of old people at work, and changes in the proportion of married women at work.

Since 1951 changes in the age distribution of the male population have resulted in only a very small decline in the ratio of the working age groups of males to the total male population. Indeed, in the next twenty years it seems unlikely that the working age groups of males will lose more than about 1·5 per cent. of the total male population, since some part of the increase in the older age groups will be offset by a smaller proportion of children. The figures for females do however suggest more change: the ratio of the 15 to 65 age group of females to all females has decreased by over 1 per cent. since 1951 and it seems likely that it will go down by a further 2 per cent. or more by 1980. Such a change in age distribution would reduce the labour force of single women both by retirement and by a shift towards the age groups in which most women are married. It would also decrease the married women labour force by retirement, though married women in any case tend to leave work at an earlier age than single women. The net effect is a little difficult to estimate but it seems likely that age distribution changes would result in a reduction of the female working population from its 1951 level by between 1 and 2 per cent. of the total female population, say from 28 to 26 per cent.

Any statements about the effects on the size of the working population of age distribution changes towards old age must obviously be qualified by changes in the proportion of old people staying at work. It is clear that there has been a long-term tendency towards a decline in the proportion of elderly people still at work.[3] It seems unreason-

[3] This trend is set out for each Census since 1901 in the Report of the Committee on the Economic and Financial Problems of the Provision for Old Age (Cmd. 9333, 1954). A note in this Journal in March 1954 indicated that 'if the proportion of the elderly remaining in employment after 65 were as high now as in 1901, nearly 1 million more workers would be added to the labour force.'

A recent publication from the Ministry of Labour and National Service *(The Length of Working Life of Males in Great Britain)* permits a contrast between the percentages of males occupied at each age from 66 to 76 in 1931 and 1951. The 1951 figure is lower in every case.

able, moreover, in view of rising living standards and greater provision for the financial needs of old people, to expect that this tendency will be much reversed, especially for those over seventy. On the other hand, recent figures for people of retirement ages who are still at work do show increases.

Some most useful information can be derived from the numbers of old people retiring from work and claiming their pensions under the National Insurance schemes. Unfortunately, when the present National Insurance schemes came into force in 1948, a number of people who were then working were classed as late-age entrants and did not become eligible for pensions until July 1958. About 300,000 old people, therefore, are excluded from the following statistics relating to the intervening ten year period.[4] About 41 per cent. of men claiming pensions in the year ending 30 June 1957 were retiring at 65. This contrasts with about 42 per cent. in 1954. A further 9 or 10 per cent. had stayed at work less than a year longer. In 1949 about 54 per cent. of males retiring were between 65 and 66. The proportion of males retiring within a year of their sixty-fifth birthday has clearly been falling a little in the last ten years. The proportion of males retiring in 1957 and 1954 who had waited until they were 70 was 20 per cent., against 22 per cent. in 1949. Here, therefore, the trend has been slightly towards a higher proportion of retired. On balance a slightly greater proportionate supply of male workers of pensionable age seems detectable, but the change is slight. The same is true of women, though a much higher proportion of women who have contributed to their own pensions retire at their pension age of 60, and fewer stay on for five years (to 65). The 1957 figures here are that 64 per cent. of those retiring were within four weeks of their sixtieth birthday, and only 13 per cent. of those retiring in 1957 had waited until they were 65.

The change towards deferment of retiral, which is indicated by Ministry of Labour data on the age distribution of employees, is, however, much larger. Figures in the June issues of the *Ministry of Labour Gazette* show increases in the numbers of elderly employees of about 20 per cent. since 1950 in the case of males over 65 and of about 50 per cent. in the case of women over 60. These increases are much in excess of the increase in the number of old people. The difference between these and the pension figures may perhaps be explained by changes in the working habits of workers who are not eligible for pensions on their own account, such as married women,

[4] Derived from the annual reports of the Ministry of Pensions and National Insurance.

or by workers who are earning, on a part-time basis, less than the maximum which is allowed to those who are also claiming pensions. Doubts about the discrepancy must remain; but, despite these doubts, it seems unlikely that contributions from elderly people staying at work will greatly increase the ratio of working to total population. No figures suggest any change towards greater willingness to work after 70; and even if we accept the maximum inference from the Ministry of Labour's figures, which may in any event represent a temporary reaction to specially strong labour demand, we can hardly count on an increase of the ratio of working population to total population of more than 1 per cent. from this source.

The proportion of married women at work has continued to rise since 1951. There were estimated to be 3,770,000 married women (excluding widows) at work in Great Britain in May 1957.[5] This contrasts with a previous estimate of 3,000,000 for May 1951. The steady increase in these estimates (all drawn from the *Ministry of Labour Gazette*) is shown in Table III. Almost half of the female working population are now married, and the number of married women at work has increased by 26 per cent. since 1951.

TABLE III

MARRIED WOMEN AT WORK IN GREAT BRITAIN

(Numbers in thousands)

Date	Number	Date	Number
May 1950 .	2,850	May 1954 .	3,370
May 1951 .	3,000	May 1955 .	3,570
May 1952 .	3,110	May 1956 .	3,723
May 1953 .	3,250	May 1957 .	3,770

Changes of this size are equivalent to an increase in the ratio of the female working population to all females of 3 per cent., or to an increase in the ratio of the total working population to total population of 1·5 per cent. Such changes are more than sufficient to offset all the effects of adverse age distribution changes since 1951, and if they continued would certainly also offset the adverse age distribution changes of the next twenty years. Thus the most probable, and the most unpredictable source of change in the ratio of working to total population at present seems to be the rate at which married women continue to come into the labour market.

D. J. ROBERTSON

University of Glasgow

[5] *Ministry of Labour Gazette*, June 1958.

CURRENT TOPICS

THE Fifth Annual Meeting of the Scottish Economic Society was held in the University of Glasgow on 9th March, 1959; there were 28 members present. The meeting approved the election, as members of Council, of Messrs. W. R. Ballantyne, A. V. Cole, T. A. F. Noble, and Professor T. Wilson to fill the vacancies left by the retirement of four members of Council. Five other members were re-elected and Mr. David Flint was re-elected Treasurer. A list of office-bearers for 1959 is published on the back cover of this issue.

Membership of the Society in 1958 showed little change from the previous year. Increased income from subscriptions and from sales to non-members helped to offset the increased costs of publishing the *Journal* but the net deficit to be met by the University Courts increased by £84 to £179. The University Courts have agreed to continue their support for a further five years. The audited accounts of the Society for the year ending 31st December, 1958, were approved by the Annual General Meeting, and are printed on pp. 162 and 163 of this issue.

The activity of local branches was moderately successful. The Dundee branch devoted its winter series of meetings to one theme, the economics of marketing, while the Edinburgh and Glasgow branches each held joint meetings with other Societies.

After the business meeting, Professor Alan T. Peacock, Professor of Economic Science in the University of Edinburgh, read a paper in which he showed how a social accounting model could be used for analysing regional economic problems. Such systematic models showed very clearly the statistical data required for dealing with the structure of regional economies, and in the case of the Scottish economy they illustrated the lack of suitable statistical series about Scotland. Professor Peacock's paper will be published in the October issue of the *Scottish Journal of Political Economy*.

The Commissioners of Inland Revenue have now approved the Scottish Economic Society for the purposes of Section 16 of the Finance Act, 1958. The whole of the annual subscription of twenty-five shillings will be allowable as a deduction from the emoluments assessable to income tax under Schedule E for members of the Society, *provided that*

(*a*) the subscription is defrayed out of the emoluments of the office or employment, *and*

(*b*) the activities of the society so far as they are directed to all or any of the following objects—

i) the advancement or spreading of knowledge (whether generally or among persons belonging to the same or similar professions or occupying the same or similar positions);

ii) the maintenance or improvement of standards of conduct and competence among the members of any profession;

are relevant to the office or employment, that is to say, the performance of the duties of the office or employment is directly affected by the knowledge concerned or involves the exercise of the profession concerned.

Form P358, obtainable from tax offices, may be used in applying for this relief.

Erratum

A printer's error resulted in the transposition of the percentages for grain crops, potatoes and sugar beet in Table III, p. 65, of the February issue of the *Journal*. For Scotland the percentages should read 6, 6 and 0 respectively and for the United Kingdom 9, 4 and 2.

SCOTTISH ECONOMIC SOCIETY

INCOME AND EXPENDITURE ACCOUNT

Year ended 31st December, 1958

EXPENDITURE

1957 £				
	Scottish Journal of Political Economy			
499	Net cost of Publication after crediting Sales to Non-Members and Advertising . . .	£639	19	11
	ADMINISTRATIVE EXPENSES			
52	Secretary's and Treasurer's outlays for stationery, postages and secretarial and administrative expenses	59	7	7
	BRANCH MEETINGS			
97	Branch expenses in connection with Meetings—Hire of rooms, publicity and expenses . .	73	4	8
648		£772	12	2
—	EXCESS OF INCOME OVER EXPENDITURE for the year	8	16	8
648		£781	8	10

INCOME

1957 £				
	SUBSCRIPTIONS			
348	Members	£412	15	8
180	6 Scottish Bank Subscriptions . . . . Bank of Scotland British Linen Bank Clydesdale & North of Scotland Bank Commercial Bank of Scotland National Bank of Scotland Royal Bank of Scotland	180	0	0
6	DONATIONS		—	
12	INTEREST on Deposit Receipt	9	4	6
546		£602	0	2
95	DONATION FROM SCOTTISH UNIVERSITIES towards expenses of the *Scottish Journal of Political Economy*	179	8	8
7	EXCESS OF EXPENDITURE OVER INCOME for the year		—	
648		£781	8	10

SCOTTISH ECONOMIC SOCIETY

BALANCE SHEET AS AT 31ST DECEMBER, 1958

1957 £					*1957* £			
	ACCUMULATED FUNDS		£127 17 3			ASSETS		
	Excess of income for the year to 31st December, 1958		8 16 8			Cash at Bank:		
128			£136 13 11		12	On Current Account		—
117	SUBSCRIPTIONS PAID IN ADVANCE		71 3 8		284	On Deposit Receipt		£316 9 0
	LIABILITIES				296			
124	Publishers for expenses of the *Journal*	£241 9 11			9	Cash in hands of Secretary and Treasurer . .		—
25	Treasurer and Secretary for stationery, secretarial expenses and outlays	26 4 0			95	Donation requested from Scottish Universities towards expenses of the *Scottish Journal of Political Economy*		179 8 8
6	Local Branch outlays	20 6 2						
155			288 0 1					
400			£495 17 8		400	DAVID FLINT, Treasurer.		£495 17 8

GLASGOW, 9th March, 1959.

I have audited the books and records of the Society for the year ended 31st December, 1958, and have found them to be sufficiently vouched and instructed.

I have examined the above Balance Sheet and annexed Income and Expenditure Account which are in agreement with the books and records; in my opinion the Balance Sheet shows the state of the Society's affairs as at 31st December, 1958, and the Income and Expenditure Account shows the excess of income over expenditure for the year stated.

JOHN A. STEWART,
Chartered Accountant,
Honorary Auditor.

BOOKS RECEIVED

Money, Credit, and Public Policy, by Lawrence Smith. (Houghton Mifflin Company, 1959. $6.75).

Instrumente u. Probleme westlicher u. sowjetischer Wirtschaftslenkung, by Günter Hedtkamp. (Wilhelm Schmitz Verlag, Giessen, 1958. Dm. 14.80).

Some Economic Illusions in the Labour Movement, by J. R. Campbell. (Lawrence & Wishart, London, 1959. 2s. 6d.)

Housing: A Co-operative Approach. (Co-operative Union, London, 1959. 1s.).

Economic and Philosophic Manuscripts of 1844, by Karl Marx. (Lawrence & Wishart, London. 3s. 6d.).

Making Money in Today's Market, by R. C. Epstein. (Doubleday & Co., New York, 1959. $1.75).

Bank of Greece: Report for the Year 1958. (Athens, 1959).

Pages 165-168 deleted, advertising